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The Relationship Between Selected Language Arts and Proofreading Performance

Eudene M. Stuart

THE RELATIONSHIP BETWEEN SELECTED LANGUAGE ARTS AND PROOFREADING PERFORMANCE

by

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This dissertation submitted by Eudene M. Stuart in partial fulfillment of the requirements for the Degree of Doctor of Education from the University of North Dakota is hereby approved by the Faculty Advisory Committee under whom the work has been done.

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ABSTRACT

Statement of the Problem

The problem of this study was to determine whether or not a significant relationship existed between the proofreading performance of senior high school business students and their language arts ability. To solve the problem, the following null hypothesis was tested:

With proofreading performance as the criterion variable, the variables of reading ability and spelling ability make no significant predictability, either singly or in combination.

Procedures

Reading ability was measured by The Nelson-Denny Reading Test. Spelling ability was measured by 50 randomly selected words from a list of 200 Commonly Misspelled Words published by Pitman Publishing Corporation. Proofreading performance was measured by four proofreading tests. Tests were administered during March, 1971 to 221 senior high school business students in selected high schools in the Counties of Lambton, Middlesex, and Elgin in the Province of Ontario, Canada. Participants were required to type and correct errors in three of the four proofreading tests. One test was corrected by the participants writing in the corrections. Two of the four tests contained spelling and typing errors placed in the copy by the researcher. Two tests were adapted from a Royal Typing Test. Time was recorded and used as a variable.

The methods of statistical analysis used were multiple correlation, multiple regression, analysis of variance, canonical correlation, and related t test of means.

Results

1. With proofreading performance measured by the number of errors found or missed, reading ability and spelling ability predicted proofreading performance. The null hypothesis was rejected at the .05 level.

2. With proofreading performance measured by the time required to complete a test, reading ability and spelling ability predicted proofreading performance in three of the four tests. The null hypothesis was rejected at the .05 level.

3. The product-moment correlation between reading and proofreading was significant at the .01 level. The same correlation was even more significant between spelling and proofreading performance.

4. Using the stepwise backward regression analysis, with the criterion variable being the number of errors missed, spelling was the most important predictor variable.

5. The participants showed no significant difference in reading ability or spelling ability according to the type of elementary school attended.

6. When proofreading performance was measured by the number of errors missed in Proofreading Tests 1 and 2, the time of day the tests were completed was not significant.

7. The participants found more typing errors than spelling errors when proofreading copy containing errors, but they found

more errors when they typed and made corrections than when they corrected the copy using a pen.

Conclusions

The following major conclusions emerged from this study:

1. Reading ability and spelling ability predict proofreading performance. Spelling was a better predictor than reading when proofreading was measured by the errors missed. More significant correlations were found in predicting the errors that would be found in others' work than in finding one's own errors.

2. The participants missed fewer of their own errors when they proofread and made corrections in their work as they typed rather than waiting until they had finished typing the material.

3. No student was able to proofread with 100 per cent accuracy.

4. A good vocabulary and the ability to comprehend what one reads were more beneficial for proofreading others' work than for detecting errors in one's own work.

CHAPTER I

INTRODUCTION

Careful proofreading is essential for the production of effective typewritten material. Every businessman knows that lack of care in proofreading results in costly errors, delays, and dissatisfied customers. Too often, though, prospective office workers have been taught only the correction of errors, not the techniques of proofreading.

Reading research indicates that reading involves the whole individual--his perceptions, his interests, his values, and his past experiences. Proofreading, on the other hand, involves seeing the details of the word.

Many high school students experience difficulty with spelling. Some educators believe that difficulty with spelling is due to lack of attention to the details of the word.

Statement of the Problem

This study will determine whether or not a significant relationship exists between the proofreading performance of senior high school business students and their language arts ability. To solve the problem, the following null hypothesis will be tested:

With proofreading performance as the criterion variable, the variables of reading ability and spelling ability make no significant predictability, either singly or in combination.

Purpose of the Study

The purpose of the study was to determine if reading ability and spelling ability predict proofreading performance. If reading ability and spelling ability show significant relationships with proofreading performance, then assistance can be given to prospective office workers seeking to improve their proofreading skills.

Need for the Study

A publication to the members of the University of Toronto Press Club says:

> The art of proofreading is as old as the craft of printing from moveable type. But while composition, printing and binding continue to be areas of never-ending technical innovation, developments in the technique of proofreading have been so few as to leave it an almost static art. Nevertheless, proofreading remains a vital link in the printing production chain between manuscript and completely published work.[1]

Lessenberry declares:

> Proofreading is a much neglected basic skill competency which is especially important in typewriting.[2]

Schuette's study identified specific topics and instructional procedures in typewriting methods books. Beginning typewriting teachers indicated that they were experiencing difficulty in developing the proofreading skills of their students. At the same time, the development of proofreading skills was given only minor emphasis in

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[1] University of Toronto Press, "Press Notes" (Toronto: University of Toronto Press, Vol. II, No. 4, 1960), p. 1.

[2] D. D. Lessenberry, T. James Crawford, and Lawrence W. Erickson, 20th Century Typewriting (Cincinnati: South-Western Publishing Company, 1957), p. 43.

the five typewriting texts that he examined. He recommended that studies be made from time to time to assist authors of typewriting methods books in presenting subject matter concerned with the teaching difficulties of beginning teachers.[1]

Very little research has been conducted in proofreading. No research studies similar to this study were found. Information obtained from this study could provide a basis for improvement of instruction in proofreading.

Limitations

This study was limited by:

1. The ability of the researcher to control previous instruction in proofreading.

2. The attitude of the students at the time of the testing period.

3. The listening ability of the students during the spelling test.

4. The instructions for the tests being accurately interpreted by the teachers and students involved in the study.

Delimitations

The following were considered as delimitations to this study:

1. Only those students enrolled in the senior year of a curriculum emphasizing business subjects in selected high schools of Lambton, Elgin, and Middlesex counties, Ontario, Canada, were included in the study.

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[1] O. H. Schuette, "An Identification of Specific Topics and Instructional Procedures" (unpublished Ed.D. dissertation, University of Denver, 1968), p. 150.

2. Reading ability, spelling ability, and proofreading performance were measured by specific tests.

3. Proofreading errors were limited to spelling and typewriting errors.

4. The study did not measure intelligence scores or achievement in subjects in the curriculum.

5. Proofreaders' marks were not used in the proofreading tests.

Definitions

Definitions are presented in this section as they apply to this study:

Eigenvalue is a measure of the variance of the correlation matrix.

Language Arts are those parts of the school curriculum directly concerned with spelling and reading.

Proofreading is the ability to recognize and correct errors in manuscript material.

Proofreading Errors are classified in this study as spelling errors or typewriting errors.

Proofreading Performance is the combined score obtained on four proofreading tests. Two tests contained errors which the students were required to correct. Two tests were to be typed, and since the tests contained no errors, only the students' errors were to be corrected.

Reading Ability is the score obtained on the Nelson-Denny Reading Test. Four measures have been recorded: Vocabulary, Reading Comprehension, Total Reading Score (the sum of Vocabulary and Reading Comprehension), and Reading Rate.

Spelling Ability is the score obtained on a test of 50 words, randomly selected, from a list of 200 commonly misspelled words published by Pitman Publishing Corporation. Each correct word is counted.

Spelling Errors are classified in this study as: errors in homonyms, errors in possessives, and other errors.

Total Proofreading Score is the total time required to complete the four proofreading tests. The time is expressed in minutes.

Typewriting Errors are classified in this study as: transpositions, omissions, additions, wrong word or letter, and other errors.

Organization of the Chapters

Each chapter contributes essential information to the study. Specifically, the chapters contain the following information:

Chapter I introduces the problem and provides the background for the research.

Chapter II contains a review of literature pertaining to reading and spelling in relation to proofreading.

Chapter III explains the procedures employed in obtaining the data and in preparing the proofreading tests.

Chapter IV analyzes the data and interprets the findings.

Chapter V includes a summary of the study, from which conclusions are drawn and recommendations made.

CHAPTER II

RELATED LITERATURE

Since this research was concerned primarily with determining if a relationship existed between reading and spelling ability and proofreading performance, an examination of the literature in the fields of reading, spelling, and proofreading was made. This will be summarized in Chapter II under three headings: typewriting research relating to reading skills; typewriting research relating to spelling skills; and typewriting research relating to proofreading skills.

Typewriting Research relating to Reading Skills

Reading is a tool of major significance. In typewriting, reading plays an important part in following directions, in interpreting forms, in preparing work from rough draft, and in typing a copy from printed or written materials. School success depends to a large extent on the individual's reading ability. Reading, though, is a complex process involving the whole personality, mind, interests, and attitudes.

When a student commences school, he may be introduced to reading by one of many systems. The alphabetic method begins with the single letters of the alphabet progressing through two- and three-letter combinations to words. Some teachers have used this method in teaching typewriting to beginners.

The phonetic method of reading substitutes letter sounds for the letters of the alphabet. It is developed through combinations of sounds to longer words. This method may be used in dictation in typewriting.

In the word method, the student may develop a sight vocabulary in a short time. The difficulty, though, is that it does not allow the pupil to recognize new words, or words similar in length or letters.

In the sentence method, the student tends to find the unit too large, and, consequently, lets his eyes wander over the page. In any case, during the development of reading habits, the student must learn to pay attention to word recognition, spelling, as well as meaning. Therefore, a combination of methods is necessary for the acquisition of efficient reading habits. In his study on "Reading Factors in Typewriting," Fuller quotes Harris as saying:

> An efficient silent reader must be able to do certain things. He must be able to recognize the printed symbols, to move his eyes effectively across the page, to read with reasonable speed, and to understand what he reads.[1]

Dolch declares that the degree of intelligence is the strongest single factor in the pupil's success in reading.[2] Harris, however, indicates that the less well-endowed students find it easier to learn the mechanics of reading than to comprehend the meaning.[3] Since the mechanics of reading rather than the meaning of the passage is the

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[1]A. J. Harris, How to Increase Reading Ability (New York: Longmans Green and Co., 1940) cited by Donald Coldwell Fuller, "Reading Factors in Typewriting" (unpublished Ed.D. dissertation, Harvard University, 1943), p. 23.

[2]E. W. Dolch, Psychology and Teaching of Reading (Boston: Ginn & Co., 1931), p. 139.

[3]Harris, How to Increase Reading Ability, p. 296.

basis for typewriting, a lower standard of intelligence is accepted for reading in typewriting than is required for reading for comprehension.[1]

In reading for typewriting, it is necessary to pay close attention to the copy. Dvorak indicates that lack of careful attention to the copy accounts for practically all reading errors in typewriting.[2]

In a study of word errors in reading, Harris found errors in the middle of longer words, such as, "precision" for "procession."[3] Fuller believes that these errors are caused by reading for word wholes while neglecting detailed perception of the word. Reversal errors in typewriting may be due to the kinaesthetic pattern of typewriting rather than to reading. Omissions and additions, on the other hand, according to Fuller, are classed as reading errors.[4] He explains it further:

> Dvorak attributes reading error in typewriting to the faulty filling in of words from the fragmentary signals. He states that from the fragmentary visual signals already mentioned, the forms of words are filled in by one's own speech patterns--minute movements of one's speech muscles as he silently pronounces the words--or by one's own visual patterns.[5]

Fuller's study involved 100 subjects of second-year and third-year typing to analyze the relationship existing between reading

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[1]Donald Coldwell Fuller, "Reading Factors in Typewriting" (unpublished Ed.D. dissertation, Harvard University, 1943), p. 25.

[2]August Dvorak, et al., Typewriting Behavior (New York: American Book Company, 1936), p. 390.

[3]Harris, How to Increase Reading Ability, p. 253.

[4]Fuller, "Reading Factors in Typewriting," p. 34.

[5]Ibid, p. 66.

techniques and typewriting skill. He found that ordinary reading is about 5.7 times the reading rate for typewriting. Increases in time for reading words produced more detailed reading of the copy. He further discovered that the comprehension factor of reading is of minor importance in reading for typewriting.[1]

The purpose of Llewellyn's study was to determine if a statistically significant relationship existed between the straight-copy typewriting performance of first-year high school typists and their skill in perceiving the details of individual words in silent reading. Working with 102 tenth-grade high school students, Llewellyn found a moderate correlation between the word perception skills tested by a battery of four tests and typewriting speed performance. He indicated that typewriting accuracy performance has some slight relationship to certain types of word perception skills.[2]

The foregoing research shows that reading in typewriting is an important tool. The reading ability required in typewriting is complex. Adaptability to the material being read is the key to success. The typist must read sufficiently far ahead to control the sequence of the letters, and must slow down when he encounters words that must be read letter by letter. Since reading for typewriting requires attention to word detail rather than comprehension, less well-endowed students experience less difficulty in reading for typewriting than in reading for academic subjects.

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[1]Fuller, "Reading Factors in Typewriting," p. 190.

[2]Howard C. Llewellyn, "The Relationship between Selected Silent Word Perception Skills and Achievement in First-Year High School Typewriting" (unpublished Ed.D. dissertation, University of North Dakota, 1970), p. 51.

Typewriting Research relating to Spelling Skills

Word recognition and spelling are closely related. Harris states that while good readers are sometimes poor spellers, readers who are poor in word recognition are rarely good spellers.[1] In reading for word wholes, the student sees the first and the last of the word, but the letters in the middle may never be perceived with any detail. Dolch says that the great problem in teaching spelling is to teach the habit of looking carefully at all the letters in a word, especially those in the middle of the word.[2] He further states that most of the mistakes in spelling are made in the center of words.

Dvorak points out that most of the so-called mechanical errors in typewriting seem to involve the center letters of words.[3] If the student is reading for word wholes without recognizing word details, it is possible that so-called mechanical errors may be due to lack of attention to details.[4]

Gates shows the interdependence of typewriting and spelling when he states:

> One may learn to spell by articulation, writing, 'visual imagery', typewriting, or in other ways. Man's native capacity to learn (spelling) favors no form of motor reaction.[5]

Gates thinks that ability to perceive small differences in words

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[1] Harris, How to Improve Reading Ability, p. 268.

[2] Dolch, Psychology and Teaching of Reading, p. 38.

[3] Dvorak, Typewriting Behavior, p. 161.

[4] Ibid, p. 181.

[5] A. I. Gates, "Psychology of Reading and Spelling," Contributions to Education, No. 129, 1922 (New York: Teachers' College, Columbia University, 1922), p. 36.

correlates quite highly with spelling. He, therefore, concludes that success in spelling depends upon the ability to perceive the details of the words.

Dolch believes that for the student to improve in spelling he must be made to care about spelling, must learn to proofread his work for spelling, must check his guesses, and must analyze new words.[1]

Russell lists a number of causes of spelling errors:

1. Sensory defects and weak perceptions as well as emotional instability.
2. General disregard for details.
3. Inferiority attitude toward spelling.
4. Apathy in regard to spelling.
5. Defective vision, hearing, or speech.
6. Psychological defects such as inferior learning capacity, poor observation, poor auditory memory, immaturity, poor visual memory, and lack of interest in spelling.
7. Pedagogical causes such as lack of acquaintance with the English language, writing difficulty, and inadequate training.[2]

In an article by Thompson appearing Teaching Opportunities in Ontario Secondary Schools, the concern of some educators is expressed.

> According to the Association for Better Basic Education, high school teachers, business executives and well-trained secretaries realize that the products of today's educational system are unable to spell. That rules for spelling exist seems an unknown fact to most educators today.[3]

He goes on to say:

> Many educators believe poor reading is often accompanied by poor spelling. Others say no. One educator said that good readers are fast readers (apparently fast readers get the

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[1] E. G. Blackstone, Improvement of Instruction in Typewriting (New York: Prentice-Hall Inc., 1949), p. 33.

[2] David H. Russell, Characteristics of Good and Poor Spellers (New York: Teachers' College, Bureau of Publications, Columbia University, 1934), p. 24.

[3] David Thompson, "Spelling Skills," Teaching Opportunities in Ontario Secondary Schools, Vol. 2, No. 5, February 26, 1964, p. 3.

> message better) but they do not concentrate on individual words the way slow readers often do--therefore they aren't apt to improve their spelling by reading.[1]

Blackstone thinks that spelling can be improved if it is emphasized constantly, and if students understand that they will be held responsible for correct spelling.[2]

Goss agrees with Blackstone in that he believes that students must take more self-responsibility for their own work. He admits, however, based on his study, that one finds it easier to locate errors in another's work than in one's own where a feeling of threat or failure exists. He concludes that there are psychological effects to be overcome by pupils before they can find errors in their own work.[3]

Bartholome tested the hypothesis of whether the typing of spelling lessons would improve spelling and proofreading with 200 ninth-grade typewriting students in California. He found that the spelling lessons helped with typing straight copy, rough draft, and statistical copy. However, the spelling lessons did not significantly improve proofreading ability.[4]

From the research reviewed, it would appear that spelling requires careful perception of word detail and the proper attitude toward spelling.

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[1]Thompson, Teaching Opportunities, p. 3.

[2]Blackstone, Improvement of Instruction in Typewriting, p. 36.

[3]James E. Goss, "Analysis of Accuracy in Spelling in Written Compositions of Elementary School Children and the Effects of Proofreading Emphasis upon Accuracy (unpublished Ed.D. dissertation, University of Oklahoma, 1959), p. 91.

[4]Lloyd W. Bartholome, "The Typewriter as a Tool for Improving Spelling" (unpublished Ed.D. dissertation, University of California at Los Angeles, 1967), p. 170.

Typewriting Research relating to Proofreading Skills

In a guide to better copy preparation and proofreading, published by the Toronto Typographic Composition Association, a distinction is made between reading and proofreading:

> Learn the distinction between "reading" and "proofreading." In reading, one visualizes the entire word. In proofreading, one reads the letters separately, as, i-m-m-e-d-i-a-t-e. The more naturally one adapts himself to this method of proofreading the easier it will be to detect errors.[1]

On the other hand, Dvorak makes a different distinction between reading and proofreading:

> Like typewriting, reading moves in word-wholes. Try reading by letters and your speed will be cut in half. Any beginning typist, to be sure, may pronounce every sound softly as he strikes the corresponding letter key with a slow careful stroke. Yet you notice that this is no more reading than it is typewriting. Such practice is preliminary exploring of a keyboard. It could not be typewriting. Not even proofreading is letter by letter.[2]

Proofreading requires a quick and accurate eye; interest in and concentration on what is being read; sufficient knowledge of spelling, word usage, and language structure to spot obvious errors in spelling and punctuation and to question phrases that do not seem to say what they were intended to mean.[3]

Proofreading is comparing work with the original copy or manuscript. In a book publisher's office this may be done by having someone read the manuscript to the editor while he checks the galley

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[1] Toronto Typographic Composition Association, "Copy Preparation and Proofreading" (Toronto: Toronto Typographic Composition Association, 1961), p. 4.

[2] Dvorak, Typewriting Behavior, p. 181.

[3] Isobel M. Cork, "Editorial Procedures and Style Notes," Toronto, 1967, p. 1. (Mimeographed.)

proofs, or by the editor's reading the manuscript into a dictaphone and checking the galleys as the tape is played back, or by having the comparing done by editorial assistants.

The student in the typewriting class is instructed to proofread his work carefully, but he is often not instructed how to proofread it. Peterson and Staples have suggested three methods of proofreading: the paper-bail method, the three-step method, and the co-operative method. With the paper-bail method, the student checks his work while it is still in the typewriter. The three-step method involves gaining a general impression of the work, reading it orally for meaning, and the third time reading for word detail. The co-operative method involves a reader and a listener. The reader reads from the original source while the listener checks the prepared copy. The second time the reader and the listener exchange roles and read again for word detail.[1]

Staples and Peterson believe that students must realize the importance of careful proofreading. They state:

> The ability to proofread has been combined with other skills much as typewriting in the past. As a result, the student places secondary importance on proofreading and is more concerned with his typing achievement.[2]

Russon and Wanous express the same views:

> One of the attitudes toward the work that must be developed is the ability and desire to find one's own mistakes. Developing this attitude necessitates the overcoming of a natural obstacle, as no individual really wants to find his own mistakes; he wants to believe that he did not make any. This is the reason (and not natural cussedness) that makes it possible for a student to find the errors in a classmate's

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[1] John C. Peterson and John Staples, "Declare War on Undetected Typing Errors," Business Education World, Vol. 49, No. 7 (March, 1969), p. 22.

[2] Ibid, p. 22.

> work but not in his own....It may be that one of the reasons for poor proofreading in typewriting is that successful proofreading is not rewarded, but is penalized....Some procedure must be devised whereby the student gets a bonus if he finds all of his errors.[1]

Staples found in his study of proofreading skills among college clerical students and professional secretaries that certain personality traits correlated with proofreading proficiency. He learned that the faster one proofreads, the less likely he is to discover errors in the copy. Scores in spelling were highly significant in predicting proofreading proficiency, particularly among college clerical students. He stated that no one in the study was able to proofread with one hundred per cent accuracy.[2]

In summary, it would appear that the reading of copy to detect errors requires exceptional alertness, concentration on what is being read, and the desire to find errors. Angus states that nothing has been published that has not contained at least one proofreading error.[3]

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[1]Allien R. Russon and S. J. Wanous, Philosophy and Psychology of Teaching Typewriting (Cincinnati: South-Western Publishing Company, 1960), pp. 155-6.

[2]John D. Staples, "An Experimental Study to Identify the Basic Abilities Needed to Detect Typescript Errors with Implications for the Improvement of Instruction in Typewriting" (unpublished Ed.D. dissertation, University of North Dakota, 1965), p. 149.

[3]Marion Angus speaking in Winnipeg at Pitman Shorthand Conference, October 24, 1970.

CHAPTER III

PROCEDURES

Design of the Study

This research was concerned primarily with determining if a relationship existed between reading and spelling ability and proofreading performance. Chapter III will explain the procedures employed to obtain the data and to prepare the proofreading tests.

Selection of Students

A letter was sent to the Directors of Education for the Counties of Lambton, Elgin, Middlesex, and Huron, as well as to the Director of Education for the City of London, Ontario, Canada. A copy of the letter is included in Appendix A. A request was made to secure data from certain schools in order that the population would include large and small schools as well as rural and urban areas. No more than two classes were requested from each school. In order to secure a group that would soon be entering the business world, students participating in the study were required to be in their senior year of a curriculum with emphasis on business subjects.

Some Directors of Education granted permission; others were unable to do so. A list of the nine schools participating in the study is included in Appendix B.

Replies to a card sent to each school indicated that 340 students would be available to participate in the study. On the basis of the replies, a packet of materials was prepared for each school.

The students involved in this study were from nine high schools in three counties of the Province of Ontario. These were both large and small schools in both rural and urban areas.

Selection of Measuring Instruments

The Nelson-Denny Reading Test, Part A[1] was selected to measure reading ability. This particular test measures reading vocabulary, reading comprehension, and reading speed. The reliability of the test was checked in the Sixth Mental Measurements Yearbook.[2] A reading specialist[3] and a psychometrist[4] at the University of North Dakota attested to its suitability in this study.

To measure spelling ability, a spelling test was prepared from a list of 200 commonly misspelled words appearing in the October issue of the Pitman Journal.[5] Two lists of 100 randomly chosen words were prepared. A pilot study consisting of 17 students in the Simcoe Composite School took the two tests. One was dictated, and the students were instructed to write the correct spelling. The other list was dictated, and the students were instructed to type the correct spelling. The results of the two tests showed that the two lists correlated at .956. When the tests were divided into four groups of

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[1]The Nelson-Denny Reading Test, Part A (Boston: Houghton Mifflin Company, 1960).

[2]Oscar K. Boros, Sixth Mental Measurements Yearbook (Highland Park: The Gryphon Press, 1965).

[3]Interview with James D. Peebles at the University of North Dakota, Grand Forks, North Dakota, October, 1970.

[4]Interview with David L. Lee at the University of North Dakota, Grand Forks, North Dakota, October, 1970.

[5]Pitman Journal, "200 Commonly Misspelled Words," Vol. LXVIII (October, 1970), p. 12.

50 words each, the correlation of the four groups was not less than .846. On the basis of this pilot study, the spelling test used in this research contained 50 words (one of the four groups that correlated highly with the other groups), and the students were required to spell the words using the typewriter. A copy of the 200 commonly misspelled words as well as a copy of the 50 words used in this study is included in Appendix C.

The researcher reviewed other studies, typewriting textbooks, and consulted with typewriting authorities before preparing the proofreading tests. For the purpose of this study, it was determined that proofreading would include the correction of errors. It was determined that proofreading material would be similar throughout the proofreading tests. A Royal Typewriter Company test[1] was selected by the researcher to represent perfect copy. A copy of the permission to use the test is shown in Appendix A. This test was divided into two parts. The first part was administered to the pilot group with instructions to type the copy, record the time, proofread and correct any errors, and then record the time again.

The researcher composed the material on business topics for the two tests containing errors. The intention of the researcher was to use vocabulary that would be familiar to the students. Each test was then duplicated with errors in spelling and typewriting placed in the copy.

The students were instructed to read, circle the errors, and write the corrections above the incorrect words in one test. Time was recorded after the correction of the errors. In the other test prepared by the

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[1]Royal Typewriter Company, Limited, Royal Typing Test, Number 10 (June, 1957).

researcher, the students were to make corrections as they typed and record the time at the end of the test. On the basis of the results obtained from the pilot study, certain refinements were made in the proofreading tests including the introduction of a fourth proofreading test. This test was the second part of the Royal Typewriter Company test[1] and corrections were to be made during the typing of the copy. This test was also administered to the students involved in the pilot study.

The results of the pilot study were punched on IBM cards and analyzed using the IBM Computer at the Computer Center at the University of North Dakota. The packet prepared for the nine schools contained the following proofreading tests:

Proofreading Test 1 -- prepared from Royal Typing Test (no errors)

Proofreading Test 2 -- prepared from Royal Typing Test (no errors)

Proofreading Test 3 -- prepared by the researcher (100 errors)

Proofreading Test 4 -- prepared by the researcher (100 errors)

Copies of the tests are included in Appendix C.

Validating the Proofreading Tests

Three students at the University of North Dakota were ranked by their staff advisor, according to their ability to proofread carefully. Proofreading Tests 1, 3, and 4 were administered. The students' scores on Tests 1 and 4 agreed with the ranking of the staff advisor. Tests 1 and 4 involved typing and correcting errors. Test 1 contained no errors while Test 4 contained 100 errors.

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[1]Royal Typewriter Company, Limited, Royal Typing Test, Number 10 (June, 1957).

Data Sheet

A data sheet was prepared to obtain information from the students involved in the study. A copy of the data sheet is shown in Appendix D. Each school was assigned a number by the researcher. Each student within the schools participating was assigned a number by the administrator of the tests in the school. When two classes were involved in the study, the second class commenced numbering from 51. Each student's number included the number assigned to the school. The data sheet provided information on sex, the type of elementary school attended, and whether or not the student was enrolled in shorthand.

Preparing the Material for Mailing

Instructions were written for administering the tests. Since it was the intention of the researcher to maintain the anonymity of the students, the students were instructed to place their number only on each test paper.

A sheet was included with the packet of material indicating the number of copies of each test mailed, and the order in which the proofreading tests were to be administered. A copy of the instructions is included in Appendix D. Each packet was prepared for mailing and sent to the schools by parcel post.

Administration of Tests

To avoid the effect of one proofreading test on another, a random order for administration of the tests was included in the packet of materials sent. The assigned order is included in Appendix E. Tests were administered in the schools during March, 1971. After the tests had been administered, all test material was returned to the researcher.

Scoring of Tests

The Nelson-Denny Reading Tests were scored on the IBM Computer at the Computer Center of the University of North Dakota, Grand Forks, North Dakota. All other tests were scored by the researcher. The scoring that was used for the proofreading tests containing errors is shown in Appendix F. Appendix G shows each participant's test scores, sex, and type of elementary school attended.

Treatment of Raw Data

The raw data was punched on IBM cards. All statistical procedures were performed using the IBM 360 Computer at the Computer Center of the University of North Dakota, Grand Forks, North Dakota.

Statistical Procedures

The methods of statistical analysis used in this study were multiple correlation, multiple regression, analysis of variance, canonical correlations, and the related t test. The product-moment correlation coefficient was used to determine the relationship between each of the test scores and reading and spelling ability. Stepwise backward regression was used to determine which of the independent variables contributed most to the prediction of proofreading ability measured by each of the four proofreading tests. Analysis of variance was used to determine the variance of each proofreading test according to the time of day the tests were administered. Canonical analysis was used to show the relationships between proofreading tests. The related t test was used to determine if the mean of each type of error for each proofreading test differed significantly.

CHAPTER IV

FINDINGS

The purpose of this study was to determine if reading ability and spelling ability predict proofreading performance. To determine relationships, the following null hypothesis was tested:

With proofreading performance as the criterion variable, the variables of reading ability and spelling ability make no significant predictability, either singly or in combination.

A reading test, a spelling test, and four proofreading tests were administered to obtain the data for the findings. To be included in the study, the participants had to complete all six tests according to the instructions sent to the schools. A total of 221 students from nine high schools in Ontario met the requirements.

The methods of statistical analysis used in this study will be presented in the following order: (1) multiple correlation, (2) multiple regression, (3) analysis of variance, (4) canonical correlations, and (5) related t test. The findings in each analysis will be interpreted to show whether or not reading ability and spelling ability were statistically significant predictors of proofreading performance.

The criterion measures were four proofreading tests, all in manuscript form, of equal length, and of the same syllabic intensity (1.5). Tests 1 and 2 contained no errors. Students typed the copy and corrected errors. Raw scores are shown in Appendix G.

Table 1 shows the mean and standard deviation for each of the measures of reading ability, spelling ability, and proofreading performance. Proofreading performance was measured by errors made by the participants while typing Proofreading Tests 1 and 2.

TABLE 1

MEANS AND STANDARD DEVIATIONS FOR READING, SPELLING AND PROOFREADING PERFORMANCE (N = 221)

Predictor and Criterion Measures	Mean	S. D.
Reading Vocabulary (Possible Score = 100)	22.96	8.26
Reading Comprehension (Possible Score = 72)	32.70	8.70
Total Reading Score (Possible Score = 172)	55.66	14.83
Reading Speed (in words per minute)	265.78	79.37
Spelling Score (Possible Score = 50)	34.35	6.58
Proofreading Test 1 -- Errors Found	6.37	4.64
-- Errors Missed	4.09	5.49
Proofreading Test 2 -- Errors Found	5.89	3.93
-- Errors Missed	3.36	5.95

Proofreading Tests 1 and 2 contained no errors. In each test, errors found indicate the number of typing errors made, but corrected. Errors missed were typing errors made but not corrected. Tests 1 and 2 were proofread under different circumstances. In Test 1, the participants typed the material and then corrected their errors. Test 2 was corrected as errors were made in the typing of the material. It may be noted that the participants found more errors in Test 1 than in Test 2. They also missed more errors in Test 1 than they missed in Test 2.

Multiple Correlation

Table 2 shows the analysis of variance for regression with the criterion being the number of errors found in Proofreading Test 1. The significance of the multiple correlation coefficient (R) between errors found and the predictor variables used in the study was determined. An F value of 2.26 or greater was necessary for significance at the .05 level with 5 and 220 degrees of freedom. The F value obtained was 2.61. This indicates that the multiple correlation coefficient for errors found is significant at the .05 level.

TABLE 2

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE ERRORS FOUND IN PROOFREADING TEST 1

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	271.43	54.29	2.61*
Deviation from Regression	215	4466.04	20.77	
	220	4737.47		

*Significant at the .05 level

The analysis of variance for the regression of the errors missed in Proofreading Test 1 is shown in Table 3, page 25. An F value of 3.11 or greater was needed for significance at the .01 level with 5 and 220 degrees of freedom. The F value obtained was 7.18. This indicates that the multiple correlation coefficient for errors is significant at the .01 level. Therefore, the null hypothesis was rejected for Proofreading Test 1. Reading ability and spelling

ability are significant predictors of proofreading performance under the conditions required in Proofreading Test 1.

TABLE 3

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE ERRORS MISSED IN PROOFREADING TEST 1

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	947.93	189.59	7.18**
Deviation from Regression	215	5679.23	26.42	
	220	6627.16		

**Significant at the .01 level

Table 4 describes the analysis of variance for regression with the criterion being the number of errors found in Proofreading Test 2. This test contained no errors and the students were instructed to correct errors made as they typed. The F value obtained was 1.59. This was not significant at the .05 level.

TABLE 4

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE ERRORS FOUND IN PROOFREADING TEST 2

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	121.18	24.24	1.59
Deviation from Regression	215	3283.00	15.27	
	220	3404.17		

The analysis of variance for the regression of the errors missed in Proofreading Test 2 is shown in Table 5. An F value of 3.11 or greater was needed for significance at the .01 level. The F value obtained was 3.93. This indicates that the multiple correlation coefficient for errors missed is significant at the .01 level. The null hypothesis is rejected for errors missed in Proofreading Test 2. Reading ability and spelling ability are significant predictors of proofreading performance.

TABLE 5

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE ERRORS MISSED IN PROOFREADING TEST 2

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	653.07	130.61	3.93**
Deviation from Regression	215	7147.44	33.24	
	220	7800.50		

**Significant at the .01 level

In Proofreading Tests 1 and 2, the relationship of reading ability and spelling ability was more significant with proofreading performance of errors missed than of errors found. It was still significant, however, at the .05 level, when errors were corrected after the typing was completed, as in Proofreading Test 1. Of the four measures of relationships of proofreading performance with reading ability and spelling ability, errors found in Proofreading Test 2 was the only measure that did not show significant prediction.

Proofreading Tests 3 and 4 each contained 50 spelling errors and 50 typing errors. Appendix F shows how the errors were classified. In Proofreading Test 3, the participants were instructed to circle errors and to write the correction above the error. In Proofreading Test 4, the participants typed from the uncorrected copy making corrections as they typed. For words to be considered correct in Proofreading Test 3, students had to circle the error and make the proper correction. Words in Proofreading Test 4 had to be typed correctly to consider errors as having been found.

Table 6, page 28, shows the means and standard deviations for the measures of reading ability, spelling ability, and the spelling and typing errors found and missed in Proofreading Tests 3 and 4.

The mean of 31.89 for spelling errors found in Proofreading Test 3 indicates that the participants found 32 of the 50 errors placed in the copy. In Test 4, however, the students found 41.26 spelling errors (out of a possible 50) placed in the copy.

The students found 41.52 typing errors of the 50 typing errors placed in Proofreading Test 3. They were able to find 47.23 typing errors (out of a possible 50) placed in Proofreading Test 4. Since each test contained the same number of errors, results may indicate that students read the words with more detail for typing than they read when correcting with a pen.

In Proofreading Tests 3 and 4, the number of spelling errors and the number of typing errors placed in the test copy was 50. When the means of errors found and errors missed totalled more than 50, the difference was caused by the correlation of words already correct in the test copy. This change by the student resulted in an additional error.

TABLE 6

MEANS AND STANDARD DEVIATIONS FOR READING, SPELLING AND PROOFREADING PERFORMANCE (N = 221)

Predictor and Criterion Measures	Mean	S. D.
Reading Vocabulary	22.96	8.26
Reading Comprehension	32.70	8.70
Total Reading Score	55.66	14.83
Reading Speed	265.78	79.37
Spelling Score	34.35	6.58
Proofreading Test 3 -- Spelling Errors Found	31.89	8.19
-- Typing Errors Found	41.52	5.72
-- Spelling Errors Missed	18.16	8.20
-- Typing Errors Missed	8.53	5.47
Proofreading Test 4 -- Spelling Errors Found	41.26	6.29
-- Typing Errors Found	47.23	2.73
-- Spelling Errors Missed	8.81	6.33
-- Typing Errors Missed	4.17	4.19
Proofreading Score on all four Proofreading Tests (total errors missed)	47.11	26.02

Table 7, page 29, shows the analysis of variance for regression with the criterion being the number of spelling errors missed in Proofreading Test 3. An F value of 3.11 was necessary for significance at the .01 level with 5 and 220 degrees of freedom. The F value obtained was 40.00. This indicates that the multiple correlation is highly significant at the .01 level. The analysis of variance for regression with the criterion being the spelling errors found was equally significant. Errors found are, therefore, not shown in analysis of variance tables.

TABLE 7

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE SPELLING ERRORS MISSED IN PROOFREADING TEST 3

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	7151.72	1430.34	40.00**
Deviation from Regression	215	7688.14	35.76	
	220	14839.86		

**Significant at the .01 level

The same F value of 3.11 was needed for significance in Table 8, page 30, which shows the analysis of variance for the regression of the typing errors in Proofreading Test 3. The F value obtained was 24.70. Thus, in Proofreading Test 3, using spelling errors and typing errors as criterion measures, the null hypothesis is rejected. Reading ability and spelling ability predict proofreading performance under conditions established in Proofreading Test 3.

Table 9, page 30, shows the analysis of variance for the regression of the spelling errors missed in Proofreading Test 4. To be significant at the .01 level, an F value of 3.11 was necessary. The F value obtained was 67.08. This is a higher value than the F value in Table 7. The spelling errors in Proofreading Test 3 were corrected using a pen, but in Proofreading Test 4 corrections were made during the typing of the test copy. The null hypothesis is rejected. Reading ability and spelling ability do predict the ability to find spelling errors in another's work.

TABLE 8

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE TYPING ERRORS MISSED IN PROOFREADING TEST 3

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	2415.28	483.05	24.70**
Deviation from Regression	215	4205.54	19.56	
	220	6620.82		

**Significant at the .01 level

TABLE 9

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE SPELLING ERRORS MISSED IN PROOFREADING TEST 4

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	5394.32	1078.86	67.08**
Deviation from Regression	215	3458.11	16.08	
	220	8852.43		

**Significant at the .01 level

The F value of 16.48 in Table 10, page 31, again showed a significant relationship between reading ability, spelling ability, and proofreading performance. The student detected typing errors in the copy while reproducing it on the typewriter. The null hypothesis is rejected. Reading and spelling predict proofreading performance.

TABLE 10

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE TYPING ERRORS MISSED IN PROOFREADING TEST 4

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	1075.07	215.01	16.48**
Deviation from Regression	215	2805.71	13.05	
	220	3880.78		

**Significant at the .01 level

Table 11 shows the analysis of variance for the regression of the total proofreading score. An F value of 3.11 was necessary for significance at the .01 level. The F value obtained was 49.71. Therefore, the null hypothesis is rejected. Reading ability and spelling ability predict proofreading performance when proofreading performance is determined by the total number of errors missed in the four tests.

TABLE 11

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE TOTAL PROOFREADING SCORE

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	79860.06	15972.01	49.71**
Deviation from Regression	215	69084.13	321.32	
	220	148944.19		

**Significant at the .01 level

Time was recorded for each of the proofreading tests. Instructions were given that each participant be allowed sufficient time to complete each test. In Proofreading Test 1, there were three measurements of time: the typing time, the proofreading time, and the total time. For Proofreading Tests 2, 3, and 4, only the total time was recorded. The total time for the four proofreading tests was also recorded. Table 12 shows the means and standard deviations for reading, spelling, and proofreading performance measured by the time required to complete each test. The time is recorded to the nearest minute.

TABLE 12

MEANS AND STANDARD DEVIATIONS FOR READING, SPELLING, AND PROOFREADING PERFORMANCE MEASURED BY TIME REQUIRED (N = 221)

Predictor and Criterion Measures	Mean	S. D.
Reading Vocabulary	22.96	8.26
Reading Comprehension	32.70	8.70
Total Reading Score	55.66	14.83
Reading Speed	265.78	79.37
Spelling Score	34.35	6.58
Proofreading Test 1 -- Typing Time	9.29	2.18
-- Proofreading Time	5.12	2.14
-- Total Time	14.41	2.94
Proofreading Test 2 -- Total Time	12.68	2.69
Proofreading Test 3 -- Total Time	14.82	3.36
Proofreading Test 4 -- Total Time	17.28	4.03
Total Proofreading Time on 4 Tests	59.21	8.91

Table 13 shows the analysis of variance for regression with the criterion being the total time required for typing and proofreading Proofreading Test 1. An F value of 2.26 was necessary for significance at the .05 level with 5 and 220 degrees of freedom. The F value obtained was 2.24. This is not significant at the .05 level. The null hypothesis is retained when time is used as a predictor variable for Proofreading Test 1.

TABLE 13

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE TOTAL TIME IN PROOFREADING TEST 1

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	94.52	18.90	2.24
Deviation from Regression	215	1811.16	8.42	
	220	1905.68		

In Proofreading Test 2, the participants worked from the same type of copy as in Proofreading Test 1, but they corrected their errors while they typed. Table 14, page 34, indicates that the F value of 5.01 was significant at the .01 level, with 5 and 220 degrees of freedom. The null hypothesis is rejected. Reading ability and spelling ability are significant predictors of proofreading time in Proofreading Test 2.

Table 15, page 34, shows the analysis of variance for regression with the criterion being the time required for proofreading and correcting the errors placed in Proofreading Test 3. An F value of 2.26 or greater was necessary for significance at the .05 level with 5 and

220 degrees of freedom. The F value obtained was 2.59. The null hypothesis is rejected at the .05 level. Reading ability and spelling ability are significant predictors of proofreading time in Proofreading Test 3.

TABLE 14

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE TOTAL TIME IN PROOFREADING TEST 2

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	166.18	33.24	5.01**
Deviation from Regression	215	1427.64	6.64	
	220	1593.82		

**Significant at the .01 level

TABLE 15

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE TOTAL TIME IN PROOFREADING TEST 3

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	142.28	28.46	2.59*
Deviation from Regression	215	2357.81	10.97	
	220	2500.09		

*Significant at the .05 level

Table 16, page 35, gives the F value for proofreading time in Proofreading Test 4. An F value of 3.11 or greater was necessary for

significance at the .01 level. The F value obtained was 4.29. The null hypothesis is rejected at the .01 level. Reading ability and spelling ability are significant predictors of proofreading time in Proofreading Test 4.

TABLE 16

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE TOTAL TIME IN PROOFREADING TEST 4

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	325.82	65.16	4.29**
Deviation from Regression	215	3268.34	15.20	
	220	3594.16		

**Significant at the .01 level

Table 17, page 36, shows the analysis of variance for regression with the criterion being the total time required for completing all four proofreading tests. An F value of 3.11 or greater was necessary for significance at the .01 level with 5 and 220 degrees of freedom. The F value obtained was 4.48. The null hypothesis is rejected at the .01 level. Reading ability and spelling ability are significant predictors of proofreading time for all four proofreading tests.

The multiple correlation of the five predictor variables was computed for each of the four proofreading tests. When the multiple correlation coefficient (R) is squared, the answer is the percentage of the criterion variance that is accounted for by the predictor variables. Table 18, page 36, shows a multiple correlation of .781 for spelling errors missed in Proofreading Test 4. This indicates

that 61 per cent of the criterion variance is accounted for by the predictor variables of reading ability and spelling ability. The remaining 39 per cent of the variance is accounted for by other factors not considered in this study.

TABLE 17

ANALYSIS OF VARIANCE FOR THE REGRESSION OF THE TOTAL TIME FOR ALL FOUR PROOFREADING TESTS

Source of Variation	df	Sum of Squares	Mean Squares	F Value
Attributable to Regression	5	1655.28	331.06	4.48**
Deviation from Regression	215	15899.48	73.95	
	220	17554.76		

**Significant at the .01 level

TABLE 18

MULTIPLE CORRELATION FOR THE PREDICTOR VARIABLES AND THE CRITERION VARIABLES

Criterion Variables	R	F	R^2
Proofreading Test 1 -- Errors Missed	.378	7.18**	.1429
Proofreading Test 2 -- Errors Missed	.289	3.93**	.0835
Proofreading Test 3 -- Spelling Errors Missed	.694	40.00**	.4816
-- Typing Errors Missed	.604	24.70**	.3648
Proofreading Test 4 -- Spelling Errors Missed	.781	67.08**	.6100
-- Typing Errors Missed	.526	16.48**	.2767
Total Proofreading Score (Total Errors Missed)	.732	49.71**	.5358

**Significant at the .01 level

Pearson Product-Moment Correlations

Table 19, page 38, shows the Pearson product-moment coefficients of correlation in a correlation matrix for each of the predictor variables and each of the criterion variables. A product-moment correlation (r) of .181 was needed for significance at the .01 level with 220 degrees of freedom using a two-tailed test. A negative correlation indicates that a high score on one variable is related to a low score on another variable. For example, reading speed correlated negatively with time required for Proofreading Test 2. This means that faster readers took less time to type and proofread the test than did the slower readers. Table 20, page 39, describes the variables entered in the correlation matrix.

Of the 221 participants in the study, 14 were male. Referring to Table 19, page 38, significant correlations for Variable 3 (Male) indicate that males read significantly faster than females (Variable 3 vs Variable 14); males missed more errors in Proofreading Test 1 (Variable 17); males missed more spelling errors and typing errors in Proofreading Test 3 (Variables 24 and 25); missed more spelling errors and typing errors in Proofreading Test 4; and had a higher proofreading score (Variable 34) than did the female participants. Since the proofreading score is the total of the errors missed, a low score shows more proficiency in proofreading.

Variables 5 and 6 represent the shorthand and non-shorthand students in the study. There were 94 of the 221 participants enrolled in shorthand. The only significant correlations were with Variables 28 (Typing Errors found in Proofreading Test 3) and 30 (Typing Errors missed in Proofreading Test 4). This indicates that shorthand students

TABLE 19

CORRELATION MATRIX OF PREDICTOR VARIABLES AND CRITERION VARIABLES

I	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	I
3	-1.00*	-.15	.15	.20*	-.00	-.14	.11	.05	.04	.04	.22*	-.15	.10	.39*	.09	.08	.13	.02	.07	.04	.25*	.28*	-.04	-.25*	-.26*	.21*	.33*	.05	-.21*	-.25*	.34*	.05	3
4		.15	-.15	-.20*	.00	.14	-.11	-.05	-.04	-.04	-.22*	.15	-.10	-.39*	-.09	-.08	-.13	-.02	-.07	-.04	-.25*	-.28*	.04	.25*	.26*	.21*	-.33*	-.05	.21*	.25*	-.34*	-.05	4
5			-1.00*	-.00	.02	-.01	-.09	.05	.08	.07	-.06	.13	.06	-.09	-.07	.11	.05	-.05	.02	-.05	-.06	-.17	.01	.06	.18*	-.17	-.20*	-.05	.17	.12	-.14	-.01	5
6				.00	-.02	.01	.09	-.05	-.08	-.07	.06	-.13	-.06	.09	.07	-.11	-.05	.05	-.02	.05	.06	.17	-.01	-.06	-.18*	.17	.20*	.05	-.17	-.12	.14	.01	6
7					-.27*	-.67*	.07	-.14	-.05	-.11	.05	-.02	-.13	-.02	.06	.05	.08	-.21	-.07	.10	.10	.16	.18*	-.09	-.14	.10	.04	.18*	-.10	-.10	.08	.21*	7
8						-.72*	-.08	.01	-.04	-.02	.06	-.00	.02	.11	-.05	.05	.00	.05	.06	.05	.04	-.05	-.12	-.04	.04	-.00	-.04	.02	.01	.08	.04	-.05	8
9							.02	.10	.07	.09	-.09	.01	.07	-.09	.00	-.08	-.06	.10	-.01	-.10	-.11	-.09	-.02	.10	.06	-.07	.01	-.15	.07	-.00	-.09	-.12	9
10								.05	-.04	.01	.25*	.05	.11	.02	-.10	.18*	.06	.08	.08	-.15	.07	.02	-.35*	-.07	.01	.00	.00	-.18*	-.01	.01	.05	-.24*	10
11									.53*	.87*	.29*	.31*	.19*	-.02	-.10	.08	-.01	.15	-.14	-.05	-.30*	-.31*	-.11	.30*	.31*	-.36*	-.17	-.22*	.36*	.29*	-.32*	-.16	11
12										.88*	.19*	.23*	.10	-.17	-.11	.06	-.05	.07	-.17	-.15	-.30*	-.29*	.01	.30*	.28*	-.32*	-.11	-.10	.32*	.17	-.33*	-.10	12
13											.27*	.31*	.17	-.11	-.12	.08	-.05	.13	-.18*	-.11	-.34*	-.34*	-.05	.34*	.34*	-.39*	-.16	-.19*	.39*	.26*	-.37*	-.15	13
14												.18*	.05	.18*	-.11	.05	-.06	.01	.09	-.17	-.08	-.04	-.19*	.08	.05	-.21*	-.02	-.19*	.21*	.04	-.05	-.23*	14
15													-.08	-.24*	-.23*	-.05	-.19*	-.05	-.20*	-.25*	-.67*	-.57*	-.05	.67*	.51*	-.76*	-.52*	-.21*	.76*	.52*	-.70*	-.22*	15
16														.22*	-.09	.51*	.30*	.43*	.04	.05	.05	-.05	-.19*	-.05	.06	.05	.08	-.08	-.05	-.02	.08	.00	16
17															.08	.15	.17	.13	.28*	.13	.32*	.57*	-.24*	-.32*	-.54*	.28*	.54*	.01	-.28*	-.27*	.58*	.01	17
18																-.07	.69*	.00	.10	.51*	.29*	.36*	.15	-.29*	-.50*	.23*	.21*	.44*	-.25*	-.25*	.50*	.64*	18
19																	.67*	.21*	.05	.21*	.05	-.10	-.15	-.05	.10	-.05	-.02	.17	.04	.01	.02	.50*	19
20																		.15	.11	.53*	.24*	.19*	.00	-.23*	-.15	.14	.14	.45*	-.14	-.18*	.23*	.69*	20
21																			.10	.23*	.05	.05	-.16	-.05	-.02	.08	.13	-.10	-.03	-.10	.10	.01	21
22																				.02	.24*	.22*	-.14	-.24*	-.20*	.30*	.52*	-.00	-.31*	-.35*	.54*	-.01	22
23																					.23*	.26*	.06	-.24*	-.19*	.17	.14	.59*	-.17	-.17	.22*	.76*	23
24																						.76*	-.23*	-.99*	-.70*	.69*	.45*	.18*	-.69*	-.50*	.84*	.14	24
25																							-.16	-.75*	-.93*	.64*	.55*	.14	-.64*	-.56*	.82*	.15	25
26																								.24*	.17	-.05	-.11	.13	.05	.01	-.22*	.45*	26
27																									.70*	-.69*	-.45*	-.18*	.68*	.51*	-.84*	-.14	27
28																										-.50*	-.50*	-.08	.58*	.51*	-.75*	-.08	28
29																											.64*	.15	-.99*	-.67*	.85*	.15	29
30																												-.01	-.64*	-.85*	.72*	.04	30
31																													-.15	-.08	.12	.82*	31
32																														.66*	-.83*	-.15	32
33																															-.73*	-.14	33
34																																.12	34
35																																	35

*Significant at the .01 level

TABLE 20

DESCRIPTION OF VARIABLES IN TABLE 19
SHOWN ON PAGE 38

Variable Number	Description
3	Sex, Male=1, Female=0
4	Sex, Male=0, Female=1
5	Shorthand=1, Non-Shorthand=0
6	Shorthand=0, Non-Shorthand=1
7	One-room elementary school=1, Otherwise=0
8	Township elementary school=1, Otherwise=0
9	Town or city elementary school=1, Otherwise=0
10	Time of day proofreading tests administered 1=1st hour, 2=2nd hour, et cetera
11	Reading Vocabulary Score
12	Reading Comprehension Score
13	Total Reading Score
14	Reading Speed
15	Spelling Score
16	Errors found in Proofreading Test 1
17	Errors missed in Proofreading Test 1
18	Typing Time for Proofreading Test 1
19	Proofreading Time for Proofreading Test 1
20	Total Time for Proofreading Test 1
21	Errors found in Proofreading Test 2
22	Errors missed in Proofreading Test 2
23	Total Time for Proofreading Test 2

TABLE 20--Continued

Variable Number	Description
24	Spelling Errors missed in Proofreading Test 3
25	Typing Errors missed in Proofreading Test 3
26	Total Time for Proofreading Test 3
27	Spelling Errors found in Proofreading Test 3
28	Typing Errors found in Proofreading Test 3
29	Spelling Errors missed in Proofreading Test 4
30	Typing Errors missed in Proofreading Test 4
31	Total Time for Proofreading Test 4
32	Spelling Errors found in Proofreading Test 4
33	Typing Errors found in Proofreading Test 4
34	Total Proofreading Score (Variables 17, 22, 24, 25, 29, and 30 added)
35	Total Proofreading Time (Variables 20, 23, 26, and 31 added)

found more typing errors in Proofreading Test 3 and missed fewer typing errors in Proofreading Test 3 and missed fewer typing errors in Proofreading Test 4.

Variables 7, 8, and 9 represent the type of elementary school the participants attended. Variable 7 (One-room elementary school) showed a significant correlation with Variables 21 (Errors found in Proofreading Test 2), 26 (Total Time for Proofreading Test 3), and 35 (Total Proofreading Time). This indicates that students who attended a one-room elementary school found fewer errors in Test 2,

required more time to complete Proofreading Test 3, and spent more time in proofreading than did participants who had attended another type of elementary school. Students who had attended a township or a city elementary school showed no significant differences on any of the variables.

A record was kept of the time of day the tests were administered in the nine schools. Variable 10 indicates that there were no significant differences in errors found or missed. Since the proofreading score was the total of the errors missed, the time of day was not considered a limitation to the study.

Variable 11 (Reading Vocabulary) showed a significant relationship with Variables 12, 13, 14, 15, 16, 24, 25, 27, 28, 29, 31, 32, 33, and 34. The positive correlations indicate that an individual with a good reading vocabulary will have better reading comprehension, will read with more speed, will be a better speller, and will find more errors in both his own work and the work of others than will a person with a smaller vocabulary. The negative correlations indicate that a person with a good reading vocabulary will miss fewer spelling errors and typing errors (Variables 24 and 25) in proofreading another's work than will an individual with a smaller vocabulary. He will miss fewer spelling errors in typing from work containing errors in spelling. A high score in Reading Vocabulary means he will not require as much time to complete a proofreading test when typing from copy containing errors, and he will also have a more desirable score. Reading vocabulary is, therefore important to proofreading, both in the detection and correction of errors, and in the time required to proofread the material.

Variable 12 (Reading Comprehension) correlated positively with Variables 13, 14, 15, 27, 28, and 32. This correlation means that the better the comprehension, the better will be the reading speed, the spelling ability, the ability to find spelling and typing errors in another's work, and the ability to find spelling errors in work that was incorrect at the time the material was typed. Variable 12 correlated negatively with Variables 24 and 25 (Spelling and Typing Errors missed in Proofreading Test 3), and with Variable 29 (Spelling Errors missed in Proofreading Test 4) and Variable 34 (Total Proofreading Score). This means that reading comprehension is helpful to avoid missing errors in another's work. The same ability in reading is beneficial to obtaining a more desirable proofreading score. Thus, reading comprehension is important to proofreading in the detection of errors, but not in the time required to proofread either one's own work or another's work.

Variable 13 (Total Reading Score) is combined score of Variables 11 and 12 (Reading Vocabulary and Reading Comprehension). The correlations were, therefore, identical with those of Variables 11 and 12. The one exception was a negative correlation with Variable 22 (Errors missed in Proofreading Test 2). This means that the better one's reading ability the fewer errors he will miss when he proofreads as he types from good copy. Since little is known about the lack of ability to locate errors in one's own work, this correlation should be noted carefully. Neither vocabulary or comprehension correlated with Variable 22, yet the combination of the two scores showed a negative correlation.

Variable 14 (Reading Speed) correlated with Variables 17, 26, 29, 31, 32, and 35. An examination of the correlations indicated that

faster readers missed more errors in Proofreading Test 1 (Variable 17); took less time in Proofreading Test 3 (Variable 26); missed fewer spelling errors in Proofreading Test 4 (Variable 29); required less time to complete Proofreading Test 4 (Variable 31); found more spelling errors in Proofreading Test 4; and took less time to complete all four proofreading tests (Variable 35) than did the slower readers. Reading speed is, therefore, contributing to proofreading performance, particularly in the time required to complete the work.

Spelling (Variable 15) showed significant correlations with Variables 17, 18, 20, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, and 35. This means that spelling ability is important to proofreading. A good speller misses fewer of his own errors (Variables 17 and 22), and he takes less time in typing (Variables 18 and 23). A good speller will also miss fewer spelling and typing errors in another's work than will a poor speller. Also, a good speller will require less time and will be a better proofreader. This supports the statement made by Cork that proofreading requires a sufficient knowledge of spelling, word usage, and language structure to spot the obvious errors in spelling.[1] Spelling shows more correlation with finding one's own errors than does reading ability. This seems to show that the quality of looking at the details of the word is found in both the good speller and the proficient proofreader.

Variable 16 (Errors found in Proofreading Test 1) correlated with Variables 17, 19, 20, 21, and 26. This indicates that students who found more errors in Proofreading Test 1 also missed more errors, and

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[1]Cork, "Editorial Procedures and Style Notes," p. 1.

took more time than did the participants who found fewer errors. The same students found more errors in Proofreading Test 2, and took less time in Proofreading Test 3.

Variable 17 (Errors missed in Proofreading Test 1) showed a significant correlation with Variables 22, 24, 25, 26, 27, 28, 29, 30, 32, 33, and 34. Students who missed more errors in Proofreading Test 1 missed more errors in the other proofreading tests, than did the participants who were able to detect errors. In other words, the ability to detect one's own errors is a good predictor of the ability to detect errors in another's work.

In Proofreading Test 1 the record of time required to type the test is shown as Variable 18. This variable showed a significant correlation with Variables 20, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, and 35. Slower typists required more time for Proofreading Tests 1, 2, and 4 than did the faster typists. The slower typists also missed more errors in Proofreading Tests 3 and 4 than did the faster typists.

The time required for proofreading and making corrections to Proofreading Test 1 is recorded as Variable 19. A significant correlation was shown with Variables 20, 21, 23, and 35. Those who took more time to proofread Proofreading Test 1 also took more time for the other tests that required typing. The same students found more errors that they made while typing Proofreading Test 2. Since Variable 20 is the combined score of Variables 18 and 19, the correlations are similar to those variables.

Variable 21 correlated with Variable 23. This shows that when students found more of their own errors, they also took more time.

Proofreading Tests 1 and 2 contained no errors. Therefore, any errors found or missed were errors that the participants had made in typing the test copy. Variable 22 (Errors missed in Proofreading Test 2) correlated with Variables 24, 25, 27, 28, 29, 30, 32, 33, and 34. Correlations were very high with Variables 30 and 34. This indicates that students who missed errors in this test also missed errors in the other tests.

Variable 23 (Total Time for Proofreading Test 2) correlated with Variables 24, 25, 27, 28, 31, 34, and 35. This indicates that those who worked quickly on Proofreading Test 2 also worked quickly on Proofreading Test 4. Their time was not significantly different on Proofreading Test 3, but they did miss more errors.

Proofreading Test 3 contained spelling and typing errors. The participants were instructed to correct these errors with a pen while proofreading the copy. Variable 24 (Spelling Errors missed in Proofreading Test 3) correlated with Variables 25, 26, 27, 28, 29, 30, 31, 32, 33, and 34. Correlations were very high with Variables 25, 27, 28, 29, 30, 32, 33, and 34. This means that if the participants did not detect the spelling errors placed in Proofreading Test 3, they also did not find other errors placed in the copy. In other words, they did not locate the typing errors in Proofreading Test 3, and the spelling errors as well as the typing errors in Proofreading Test 4. This tends to question the theory that it is easier to find errors in another's work than in one's own work.

Variable 25 (Typing Errors missed in Proofreading Test 3) showed the same high correlations as Variable 24. This would seem to indicate that there is a very little difference between a spelling error and a

typing error when proofreading typewritten material. Since there was no typing involved in Proofreading Test 3, the time required to complete the test was the time needed to read the copy and write in the corrections. Variable 26 correlated with Variables 27, 34, and 35. This shows that the more time spent in completing Proofreading Test 3 the more spelling errors were found. This resulted in a more desirable proofreading score. Since students made very few changes to words that were already correct, Variables 27 and 28 showed the same correlations as Variables 24 and 25.

Proofreading Test 4 contained spelling and typing errors. The students were required to correct the errors as they typed. Variables 29 and 30 (Spelling and Typing Errors missed in Proofreading Test 4) correlated highly with each other and with Variables 32, 33, and 34. While Variable 29 showed an almost perfect negative correlation (-.99) with Variable 32 (Spelling Errors found in Proofreading Test 4), Variable 30 showed a less than perfect correlation (-.85) with Variable 33 (Typing Errors found in Proofreading Test 4). During the typing of the test, students introduced errors into their own copy that were not in the test copy.

The time required to complete Proofreading Test 4 (Variable 31) correlated only with the total time required to complete all four proofreading tests. The total proofreading score (Variable 34) correlated highly with Variables 32 and 33, but had a low correlation with the total proofreading time (Variable 35). This seems to indicate that the ability to detect errors in typewritten copy is not closely related to the time required to type the copy and proofread it.

Stepwise Backward Regression

The data for errors missed and the time required to complete each of the four proofreading tests were subjected to a multiple regression procedure known as the stepwise backward regression. The purpose of this analysis was to determine which of the variables contributed the most toward predicting the criterion. In general, variables are eliminated in reverse order as their contribution to predicting the criterion. As a byproduct, a multiple correlation is given at each stage.

The tables are read from the bottom to the top, showing the most important variable at the bottom of the table. For example, in Table 21, page 48, when all five predictor variables are used to predict Errors missed in Proofreading Test 1, a multiple correlation of .378 results. When the variable of Reading Vocabulary is eliminated, the multiple correlation remains .378, indicating that no predictability within this model is due to Reading Vocabulary. The next variable eliminated is Total Reading Score. After its elimination, a multiple correlation of .369 results, again indicating little predictability to this variable. At the next stage, Reading Comprehension was eliminated, yielding a multiple correlation of .334, and at the next stage Reading Speed was eliminated. Because there is but one remaining variable, the multiple correlation reported as .243 is actually the zero order correlation with Spelling Score, the last variable to be eliminated.

Table 22, page 48, shows the stepwise backward regression for variables related to Errors missed in Proofreading Test 2. The Spelling Score was the most important predictor, and Reading

Comprehension was the least important predictor. The errors missed in Proofreading Test 1 and Proofreading Test 2 were errors made by the participants while working from a perfect copy.

TABLE 21

STEPWISE BACKWARD REGRESSION FOR VARIABLES RELATED TO ERRORS MISSED IN PROOFREADING TEST 1

Step	Variable Eliminated	Multiple Correlation
1	None (Full Model)	.378
2	Reading Vocabulary	.378
3	Total Reading Score	.369
4	Reading Comprehension	.334
5	Reading Speed	.243
6	Spelling Score	

TABLE 22

STEPWISE BACKWARD REGRESSION FOR VARIABLES RELATED TO ERRORS MISSED IN PROOFREADING TEST 2

Step	Variable Eliminated	Multiple Correlation
1	None (Full Model)	.289
2	Reading Comprehension	.289
3	Reading Vocabulary	.287
4	Reading Score	.240
5	Reading Speed	.204
6	Spelling Score	

It will be noted, when referring to Table 23, that the multiple correlations are much higher when proofreading is done under conditions prescribed for Proofreading Test 3 (correction of errors placed in the copy being made using a pen). Once again, the Spelling Score was the most important predictor variable while Reading Comprehension was the least important.

TABLE 23

STEPWISE BACKWARD REGRESSION FOR VARIABLES RELATED TO ERRORS MISSED IN PROOFREADING TEST 3

Step	Variable Eliminated	Multiple Correlation	
		Spelling	Typing
1	None (Full Model)	.694	.604
2	Reading Comprehension	.694	.607
3	Reading Vocabulary	.692	.607
4	Reading Speed	.688	.598
5	Total Reading Score	.674	.572
6	Spelling Score		

Table 24, page 50, shows that the Spelling Score was the most important predictor variable when the participants typed from copy containing spelling errors. Reading Speed was the least important predictor variable.

Errors placed in Proofreading Test 4, and classified as typing errors, comprised the criterion variable in Table 25, page 50. Reading from the bottom to the top of the table, it will be noted that the Spelling Score was the most important predictor variable, and Reading Vocabulary was the least important one.

TABLE 24

STEPWISE BACKWARD REGRESSION FOR VARIABLES RELATED TO ERRORS CLASSIFIED AS SPELLING ERRORS MISSED IN PROOFREADING TEST 4

Step	Variable Eliminated	Multiple Correlation
1	None (Full Model)	.781
2	Reading Speed	.780
3	Reading Comprehension	.780
4	Reading Vocabulary	.780
5	Total Reading Score	.764
6	Spelling Score	

TABLE 25

STEPWISE BACKWARD REGRESSION FOR VARIABLES RELATED TO ERRORS CLASSIFIED AS TYPING ERRORS MISSED IN PROOFREADING TEST 4

Step	Variable Eliminated	Multiple Correlation
1	None (Full Model)	.526
2	Reading Vocabulary	.526
3	Reading Comprehension	.525
4	Total Reading Score	.525
5	Reading Speed	.519
6	Spelling Score	

When the criterion variable was the number of errors (either spelling or typing) missed in each proofreading test, the Spelling Score

was the most important predictor variable. The least important varied between Reading Vocabulary and Reading Comprehension. This tends to support Fuller when he states that the comprehension factor of reading is of minor importance in reading for typewriting.[1]

The stepwise backward regression method was used with the time required to complete each proofreading test as the criterion variable. Since the F value was not statistically significant at the .05 level for Proofreading Test 1, stepwise backward regression was not performed for Proofreading Test 1.

Even though the copy for Proofreading Test 2 contained no errors, the Spelling Score was the most important predictor variable of the time require to complete typing and proofreading the copy. Errors were corrected during the typing of the copy. Table 26 shows that Reading Vocabulary was the least important predictor variable.

TABLE 26

STEPWISE BACKWARD REGRESSION FOR VARIABLES RELATED TO TIME REQUIRED FOR PROOFREADING TEST 2

Step	Variable Eliminated	Multiple Correlation
1	None (Full Model)	.322
2	Reading Vocabulary	.310
3	Total Reading Score	.289
4	Reading Comprehension	.279
5	Reading Speed	.250
6	Spelling Score	

[1]Fuller, "Reading Factors in Typewriting," p. 34.

The time used as the criterion variable in Table 27 was the time required to read and make corrections of errors placed in the copy. There was no typing involved in Proofreading Test 3. Corrections were written with a pen. Reading Table 27 from the bottom, it will be noted that Reading Speed was the most important predictor variable. The least important one was Reading Comprehension.

TABLE 27

STEPWISE BACKWARD REGRESSION FOR VARIABLES RELATED TO TIME REQUIRED FOR PROOFREADING TEST 3

Step	Variable Eliminated	Multiple Correlation
1	None (Full Model)	.239
2	Reading Comprehension	.239
3	Total Reading Score	.224
4	Reading Vocabulary	.210
5	Spelling Score	.193
6	Reading Speed	

Table 28, page 53, gives the same information for Proofreading Test 4. Like Proofreading Test 3, this test contained spelling and typing errors. The students were instructed to type from the copy making corrections as they typed. Under these conditions, Reading Vocabulary was the most important predictor variable of the time required to complete the test.

When the time required to complete the test was considered as the criterion variable, reading ability was an important predictor variable. Spelling ability was also important.

TABLE 28

STEPWISE BACKWARD REGRESSION FOR VARIABLES RELATED TO TIME REQUIRED FOR PROOFREADING TEST 4

Step	Variable Eliminated	Multiple Correlation
1	None (Full Model)	.301
2	Reading Comprehension	.299
3	Total Reading Score	.296
4	Reading Speed	.273
5	Spelling Score	.227
6	Reading Vocabulary	

Multiple Regression

Reading research indicates that true reading is a perceptual art involving the whole individual, his interests, his past experiences, and his values. Multiple regression analysis was used to obtain the mean and standard deviation for the reading ability of the participants according to the type of elementary school attended. To be significantly different, an F value of 3.04 was necessary for 2 and 220 degrees of freedom. In no aspect of reading ability was the F value significant. Table 29, page 53, shows the means, standard deviations, and the F values of the participants.

From the analysis, the number of students attending the nine high schools involved in the study coming from each type of elementary school was determined. There were 33 students who had attended a one-room elementary school, 64 who had attended a township school, and 124 who had attended a town or city elementary school.

TABLE 29

MEANS, STANDARD DEVIATIONS, AND F VALUES FOR READING ABILITY AND SPELLING ABILITY ACCORDING TO TYPE OF ELEMENTARY SCHOOL ATTENDED

Variable	Total Group Mean	S.D.	1-room Mean	Twsp. Mean	City Mean	F Value
Reading Vocabulary	22.96	8.26	20.15	23.03	23.67	2.40
Reading Comprehension	32.70	8.70	31.76	32.15	33.23	.54
Reading Speed	265.78	79.37	275.00	272.64	259.79	.81
Spelling Score	34.35	6.58	34.12	34.33	34.43	.03

One-Way Analysis of Variance

To determine the effect of the time of day on the participants' performance during the proofreading tests, the time when the students completed the major part of the tests was recorded as follows:

Between 9.00 and 10.00 1

Between 10.00 and 11.00 2

Between 11.00 and 12.00 ..... 3, et cetera.

The cards were sorted according to the time of day. A one-way analysis of variance was done for the errors missed in Proofreading Test 1 and Proofreading Test 2. Since both these tests were correct copy, the errors missed were errors that the students had made while typing. Table 30, page 55, gives the means and standard deviations for each group. An F value of 2.41 was necessary for significance at the .05 level. The F values of 1.98 for Proofreading Test 1 and 1.54 for Proofreading Test 2 were not significant. The time of day was not, therefore, considered as a limitation to the study.

TABLE 30

MEANS, STANDARD DEVIATIONS, AND F VALUES FOR ERRORS MISSED ON PROOFREADING TESTS 1 AND 2 ACCORDING TO TIME OF DAY

Group	Number in Group	Errors missed on Proofreading Tests Test 1 Mean	Test 1 S. D.	Test 2 Mean	Test 2 S. D.
1	28	2.86	4.69	3.39	4.60
2	59	4.92	6.83	3.47	5.67
3	74	3.49	4.40	2.22	3.82
4	15	6.93	8.25	5.67	5.99
5	45	3.80	4.06	4.29	9.02
	221				
F Ratio		1.98		1.54	

Canonical Correlation

Canonical correlation is the relationship between two sets of variables. Thus, in this study, the variables of errors and time for each proofreading test were considered as a set of variables. Each of the four proofreading tests became a set of variables and was compared as a set with each other proofreading test. Canonical correlations are shown for the relationships between the sets of variables in Tests 1 and 2, and between the sets of variables in Tests 3 and 4. Tests 1 and 2 contained no errors, and the students proofread from their own typing under different circumstances. Proofreading Tests 3 and 4 contained errors, and the students proofread under different circumstances. The

means and standard deviations for the variables in Proofreading Tests 1 and 2 used for canonical correlation are shown in Table 31.

TABLE 31

MEANS AND STANDARD DEVIATIONS FOR PROOFREADING PERFORMANCE AS MEASURED BY PROOFREADING TESTS 1 AND 2

Criterion Measures	Proofreading Test 1 Mean	S.D.	Proofreading Test 2 Mean	S.D.
Errors Found	6.37	4.64	5.89	3.93
Errors Missed	4.09	5.49	3.36	5.95
Typing Time	9.29	2.18		
Proofreading Time	5.12	2.14		
Total Time	14.41	2.94	12.68	2.69

In the canonical correlation analysis, the left-hand variables became the set of predictor variables while the right-hand variables became the set of criterion variables. Table 32, page 57, shows the canonical correlation between the left-hand variables (Proofreading Test 1) and the right-hand variables (Proofreading Test 2). The canonical correlations were all significant at the .01 level. Therefore, there is at least one significant way in which the two proofreading tests are related. An analysis of the correlation coefficients indicates that the variables of time contributed the most to the significant canonical correlations.

Table 33, page 57, shows the means and standard deviations for the variables used for canonical analysis. These variables are from Proofreading Tests 3 and 4, the two tests that contained errors.

TABLE 32

CANONICAL CORRELATIONS FOR PROOFREADING TESTS 1 AND 2

Number of Eigenvalues Removed	Largest Eigenvalue Remaining	Corresponding Canonical Correlation	Lambda	Chi-Square	df
0	.3577	.598**	.493	153.12	15
1	.1847	.429**	.767	57.25	8
2	.0584	.242**	.941	13.03	3

**Significant at the .01 level

TABLE 33

MEANS AND STANDARD DEVIATIONS FOR PROOFREADING PERFORMANCE AS MEASURED BY PROOFREADING TESTS 3 AND 4

Criterion Measures	Proofreading Test 3 Mean	Proofreading Test 3 S.D.	Proofreading Test 4 Mean	Proofreading Test 4 S. D.
Spelling Errors Found	31.89	8.19	41.26	6.29
Typing Errors Found	41.52	5.72	47.23	2.73
Spelling Errors Missed	18.16	8.20	8.81	6.33
Typing Errors Missed	8.53	5.47	4.17	4.19
Total Time	14.82	3.36	17.28	4.03

In the canonical correlation analysis between the set of variables described under Proofreading Test 3 (the left-hand variables) and the set of variables described under Proofreading Test 4 (the right-hand variables) the canonical correlations were significant as shown in Table 34, page 58. An analysis of the coefficients of the left-hand

variables indicates that spelling errors showed the largest relationship.

TABLE 34

CANONICAL CORRELATIONS FOR PROOFREADING TESTS 3 AND 4

Number of Eigenvalues Removed	Largest Eigenvalue Remaining	Corresponding Canonical Correlation	Lambda	Chi-Square	df
0	.5499	.7416**	.3942	200.592	25
1	.0863	.2938*	.8760	28.537	16
2	.0323	.1798	.9588	9.080	9
3	.0086	.0926	.9908	1.992	4
4	.0006	.0251	.9994	.136	1

**Significant at the .01 level
*Significant at the .05 level

Multiple Correlation according to Types of Errors

For the purpose of this study, typing errors missed by the students in Proofreading Tests 1 and 2 were classified as Additions (the addition of a word, letter, or syllable); Transpositions (the transposing of a letter or group of letters); Wrong Word (the typing of an incorrect letter or letters or the substitution of another word); Omissions (the omission of a word, a letter or letters); and Capitalization (the omission of a capital or the insertion of a capital when no capital was needed). The same definition of typewriting errors was used in Proofreading Tests 3 and 4, but in these tests the typing errors were inserted in the copy by the researcher. In addition to the

typewriting errors in Proofreading Tests 3 and 4, spelling errors were inserted in the copy. Spelling errors were classified as errors in homonyms, errors in the use of the possessive, and other spelling errors. Since all material used in the study was in typewritten form, strictly speaking all errors were typewriting errors. Because the study was examining relationships among the variables of reading and spelling and proofreading performed under different conditions, the researcher classified other spelling errors as those words that might be seen on lists of commonly misspelled words. The scoring that was used for Proofreading Tests 3 and 4 is shown in Appendix F.

Table 35, page 60, shows the means and standard deviations for each type of error in Proofreading Tests 1 and 2. The two columns at the right of the table show the means and standard deviations for errors that the students made that were not errors in the original copy used for Proofreading Test 4. It might be expected that when typing from copy containing errors, students might fail to correct errors that were not errors in the original copy. Yet the students missed fewer of their own errors in Proofreading Test 4 than they did while typing Proofreading Tests 1 and 2 (perfect copy material).

The most frequently uncorrected error was an omission error. The next most frequently uncorrected error was a wrong-word type of error.

Table 36, page 60, presents the means and standard deviations for each type of spelling and typewriting error not detected by the students while completing Proofreading Tests 3 and 4. It will be noted that the participants missed fewer typewriting errors than spelling errors. However, they missed fewer errors in Proofreading Test 4 than in Test 3.

TABLE 35

MEANS AND STANDARD DEVIATIONS FOR TYPES OF ERRORS MISSED IN TYPING FROM CORRECT COPY OF PROOFREADING TESTS

Types of Errors	Proofreading Tests					
	Test 1		Test 2		Correct part of Test 4	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Additions	.77	1.21	.57	1.23	.22	.56
Capitalization	.05	.28	--	--	--	--
Omissions	1.61	3.42	1.80	5.28	.52	1.32
Transpositions	.34	.90	.20	.52	.08	.35
Wrong Word	1.30	2.25	.92	1.64	.56	1.23
Spelling	--	--	--	--	.06	.24

TABLE 36

MEANS AND STANDARD DEVIATIONS FOR TYPES OF ERRORS MISSED FOR ERRORS PLACED IN PROOFREADING TESTS 3 AND 4

Types of Errors	Proofreading Tests					
	Test 3			Test 4		
	Number	Mean	S.D.	Number	Mean	S.D.
Homonyms	7	2.24	1.64	10	2.18	1.69
Possessives	--	--	--	2	.69	.68
Other Spelling Errors	43	15.86	7.14	38	5.99	4.97
Additions	10	1.95	1.51	15	1.08	1.34
Omissions	18	3.87	3.06	22	1.65	2.28
Transpositions	12	1.26	1.20	8	.33	.66
Wrong Word	10	1.55	1.30	5	1.11	1.69

Related t Test of Means

The Related t Test of Means program is designed to compute the t values, the means of the differences, the standard deviations of the differences, and the standard errors of the differences. Table 37 gives the means of the differences for the types of errors missed in each proofreading test. A t value of 1.98 was necessary for significance at the .05 level and 2.62 for significance at the .01 level.

It will be noted from Table 37 that there was a significant difference between the means of errors missed in Proofreading Tests 1 and 2 classified as errors in transpositions and wrong words. When the students typed from Proofreading Test 4, they produced significantly fewer errors in the correct words in the test copy.

TABLE 37

RELATED t TEST OF MEANS FOR TYPES OF ERRORS MISSED WHEN TYPING FROM CORRECT COPY OF TESTS

Variable	Mean of Difference	S.D. of Difference	S.E. of Difference	t Value
Additions 1 vs 2	.204	1.56	1.05	1.94
Transpositions 1 vs 2	.145	.90	.06	2.39*
Wrong Word 1 vs 2	.385	2.27	.15	2.52*
Omissions 1 vs 2	-.186	6.21	.42	-0.44
Additions 1 vs 4A	.552	1.27	.09	6.44**
Transpositions 1 vs 4A	.267	.95	.06	4.18**
Wrong Word 1 vs 4A	.742	2.44	.16	4.51**
Omissions 1 vs 4A	1.090	3.53	.24	4.60**

**Significant at the .01 level
*Significant at the .05 level

Table 38 presents the means of the differences, the standard deviations of the differences, the standard error of the differences, and the t values for the types of errors missed in Proofreading Tests 3 and 4. The number of errors in the copy was the same, but the types of errors were proportioned differently as indicated by Table 36, page 60.

The difference between means was significant at the .01 level for each type of error except homonyms. Positive values for the means indicate that more errors were missed in the first test mentioned (Proofreading Test 3) than in the second test mentioned (Proofreading Test 4). This seems to indicate that the student reads the word for more detail in typewriting than when he is reading to proofread and make corrections using a pen.

TABLE 38

RELATED t TEST OF MEANS FOR TYPES OF ERRORS MISSED IN PROOFREADING TESTS 3 AND 4

Variable	Mean of Difference	S.D. of Difference	S.E. of Difference	t Value
Additions 3 vs 4	.869	1.52	.10	8.49**
Transpositions 3 vs 4	.928	1.26	.09	10.98**
Wrong Word 3 vs 4	.443	1.91	.13	3.45**
Omissions 3 vs 4	2.226	3.17	.21	10.43**
Homonyms 3 vs 4	.068	1.68	.11	.60
Other Spelling 3 vs 4	9.878	5.41	.36	27.13**

**Significant at the .01 level

Pearson Product-Moment Correlations

Table 39, page 65, presents the correlation matrix for each type of error along with the reading ability and spelling ability scores. To be significant at the .01 level, a correlation coefficient (r) of .18 was necessary.

To improve the clarity of Table 39, page 65, the following interpretation is given:

(11) Reading Vocabulary

(12) Reading Comprehension

(13) Total Reading Score

(14) Reading Speed

(15) Spelling Score

(38) Additions Errors in Proofreading Test 1

(39) Transpositions in Proofreading Test 1

(40) Wrong Word Errors in Proofreading Test 1

(41) Omissions Errors in Proofreading Test 1

(42) Capitalization Errors in Proofreading Test 1

(44) Additions Errors in Proofreading Test 2

(45) Transpositions in Proofreading Test 2

(46) Wrong Word Errors in Proofreading Test 2

(47) Omissions Errors in Proofreading Test 2

(49) Homonyms in Proofreading Test 3

(50) Other Spelling Errors in Proofreading Test 3

(52) Additions Errors in Proofreading Test 3

(53) Transpositions in Proofreading Test 3

(54) Wrong Word Errors in Proofreading Test 3

(55) Omissions Errors in Proofreading Test 3

(57) Homonyms in Proofreading Test 4

(58) Possessives in Proofreading Test 4

(59) Other Spelling Errors in Proofreading Test 4

(61) Additions Errors in Proofreading Test 4

(62) Transpositions in Proofreading Test 4

(63) Wrong Word Errors in Proofreading Test 4

(64) Omissions Errors in Proofreading Test 4

(66) Additions Errors added by Students in Test 4

(67) Transpositions added by Students in Test 4

(68) Wrong Word Errors added by Students in Test 4

(69) Omissions Errors added by Students in Test 4

(70) Spelling Errors added by Students in Test 4

In Table 39, page 65, Variable 11 (Reading Vocabulary) correlated significantly with Variables 12, 13, 14, 15, 49, 50, 52, 53, 54, 55, 57, 59, and 61. These measures were the measures of reading ability, spelling ability, and all types of errors in Proofreading Test 3 as well as the following errors in Proofreading Test 4: homonyms, other spelling errors, and transpositions. Thus, the null hypothesis is rejected at the .01 level when the predictor variable is Reading Vocabulary, and the criterion variable is the ability to detect errors in Proofreading Tests 3 and 4.

Variable 12 (Reading Comprehension) correlated significantly with Variables 13, 14, 15, 49, 50, 53, 54, 55, 57, 59, and 61. This correlation was very similar to Reading Vocabulary, but the correlation with errors in Additions in Proofreading Test 3 was not very significant. Since Variable 13 was a combination of Variables 11

TABLE 39

CORRELATION MATRIX OF PREDICTOR VARIABLES AND TYPES OF ERRORS MISSED IN PROOFREADING TESTS

X	(12)	(13)	(14)	(15)	(38)	(39)	(40)	(41)	(42)	(44)	(45)	(46)	(47)	(49)	(50)	(52)	(53)	(54)	(55)	(57)	(58)	(59)	(61)	(62)	(65)	(64)	(66)	(67)	(68)	(69)	(70)	X
11	.53*	.87*	.29*	.31*	.03	-.06	-.05	-.02	.07	-.12	-.01	-.01	-.11	-.34*	-.26*	-.24*	-.22*	-.34*	-.20*	-.32*	-.04	-.34*	-.24*	-.13	-.04	-.14	-.05	-.06	.00	.06	.00	11
12		.88*	.19*	.23*	-.08	-.14	-.11	-.14	.00	-.06	-.17	-.13	-.12	-.30*	-.27*	-.18*	-.26*	-.23*	-.24*	-.26*	.02	-.32*	-.21	-.11	.01	-.13	-.14	-.07	.02	.04	-.08	12
13			.27*	.31*	.03	-.11	-.08	-.09	.04	-.10	-.10	-.08	-.13	-.36*	-.30	-.24*	-.28*	-.32*	-.25*	.33*	-.01	-.37*	-.26*	-.14	-.02	-.16	-.11	-.07	.01	.05	-.05	13
14				.18*	.14	.02	.13	.15	-.02	-.02	.05	.10	.08	-.10	-.07	-.06	-.06	-.10	.09	-.25*	-.03	-.18*	-.01	-.09	.06	-.03	-.05	.00	.04	.02	-.13	14
15					-.13	-.18*	-.20*	-.16	-.07	-.16	-.19*	-.16	-.11	-.48*	-.66*	-.46*	-.48*	-.45*	-.41*	-.56*	-.17	-.76*	-.46*	-.36*	-.23*	-.37*	-.23*	-.19*	-.16	-.26*	-.14	15
38						.16	.54*	.14	.20*	.18*	.57*	.20*	-.03	-.21*	.14	.23*	.09	.24*	.15	.10	.08	.14	.18*	.17	.21*	.22*	.11	.19*	.14	.23*	.00	38
39							.38*	.11	.48*	.10	.28*	.22*	.14	.17	.17	.17	.18*	.13	.16	.13	-.02	.18*	.29*	.16	.06	.12	.30*	.05	.07	.01	-.01	39
40								.33*	.30*	.31*	.31*	.35*	.23*	.15	.26*	.27*	.17	.28*	.17	.12	-.03	.23*	.29*	.30*	.21*	.20*	.24*	.24*	.11	.20*	.06	40
41									.22*	.06	.17	.26*	.03	.22*	.22*	.26*	.21*	.18*	.19*	.15	.10	.21*	.17	-.01	.11	.09	.08	.05	.12	.11	.04	41
42										.06	.30*	.17	.06	.07	.02	.16	.07	.05	.08	-.06	.03	-.06	.11	.17	.04	.12	.07	.05	.02	.19*	-.05	42
44											.14	.15	.15	.12	.20*	.08	.10	.25*	.07	.19*	-.04	.17	.21	.20	.10	.18*	.12	.04	.10	.07	-.07	44
45												.30*	.09	.13	.10	.11	.09	.11	.12	.09	.05	.21*	.18*	.18*	.08	.15	.05	.11	.02	.16	-.06	45
46													.15	.21*	.20*	.27*	.23*	.22*	.18*	.20*	-.01	.27*	.32*	.15	.29*	.28*	.42*	.16	.22*	.18*	.11	46
47														.10	.12	.06	.05	.06	.11	.13	.04	.20*	.19*	.08	.07	.17	.06	.00	.04	.04	.02	47
49															.57*	.52*	.46*	.49*	.51*	.49*	.17	.56*	.43*	.20*	.22*	.28*	.20*	.09	.16	.13	.09	49
50																.55*	.62*	.48*	.57*	.44*	.10	.65*	.59*	.28*	.17	.28*	.19*	.18*	.08	.14	.16	50
52																	.51*	.59*	.47*	.34*	.05	.49*	.43*	.22*	.23*	.31*	.24*	.25*	.10	.18*	.15	52
53																		.50*	.50*	.31*	.08	.51*	.32*	.19*	.17	.24*	.20*	.10	.13	.15	.12	53
54																			.48*	.39*	.06	.54*	.48*	.23*	.20*	.40*	.26*	.22*	.16	.20*	.10	54
55																				.32*	.14	.47*	.41*	.19*	.21*	.32*	.17	.13	.12	.20*	.09	55
57																					.17	.62*	.41*	.24*	.33*	.36*	.19*	.11	.28	.15	.20	57
58																						.14	.12	-.01	.06	.06	.07	-.05	.11	.13	.03	58
59																							.55*	.39*	.29*	.46*	.23*	.21*	.22*	.22*	.16	59
61																								.42*	.25*	.39*	.57*	.28*	.23*	.17	.09	61
62																									.27*	.28*	.16	.55*	.22*	.14	.05	62
65																										.36*	.25*	.36*	.85*	.53*	.09	63
64																											.18*	.26*	.35*	.60*	.10	64
66																												.14	.32*	.08	.08	66
67																													.21*	.24*	.22*	67
68																														.23*	-.02	68
69																															.05	69
70																																70

*Significant at the .01 level

and 12, the same significant correlations were shown as were seen with Variable 11. Variable 14 (Reading Speed) showed only one significant correlation. That was with Variable 57 (Homonyms in Proofreading Test 4). This was a negative correlation indicating that the faster one reads the fewer homonyms are missed in proofreading copy.

Spelling (Variable 15) showed a number of significant correlations: Variables 39, 40, 45, 49, 50, 52, 53, 54, 55, 57, 59, 61, 62, 63, 64, 66, 67, and 69. More significant correlations were shown with errors in Proofreading Tests 3 and 4 than with Proofreading Tests 1 and 2. The extent of the significance of the correlations seem to indicate that spelling ability is a better predictor of proofreading performance than is reading ability.

Variable 38 (Additions in Proofreading Test 1) correlated with Variables 40, 42, 45, 46, 49, 52, 54, 63, 64, 67, and 69. This appears to indicate a strong relationship between types of errors missed in each proofreading test.

Transpositions in Proofreading Test 1 (Variable 39) showed a significant correlation with Variable 40 (Wrong Words), Variable 42 (Capitalization), Variable 45 (Transpositions in Test 2), Variable 46 (Wrong Word in Test 2), Variable 59 (Other Spelling Errors in Test 4), Variable 61 (Additions in Test 4), and Variable 66 (other Additions in Test 4).

Variable 40 (Wrong Word in Test 1) correlated with Variable 41 (Omissions in Test 1), Variable 42 (Capitalization in Test 1), all types of errors in Test 2, Variable 50 (Other Spelling Errors in Test 3), Variable 52 (Additions in Test 3), Variable 54 (Wrong Word in Test 3), Variable 59 (Other Spelling Errors in Test 4), and nearly all

typing errors in Proofreading Test 4, whether placed by the researcher or made by the participant and not corrected.

Variable 41 (Omissions in Test 1) showed a significant correlation with Variable 42 (Capitalization), Variable 46 (Wrong Word in Test 2), Variable 49 (Homonyms in Test 3), Variable 50 (Other Spelling Errors in Test 3), some typing errors in Test 3, and Variable 59 (Other Spelling Errors in Test 4). Variable 42 showed a significant correlation with Variable 45 (Transpositions in Test 2) and with Variable 69 (added Omissions in Test 4).

Variable 44 (Additions in Test 2) correlated significantly with Variable 50 (Other Spelling Errors in Test 3), Variable 54 (Wrong Word in Test 3), Variable 57 (Homonyms in Test 4), and some typing errors in Test 4.

Variable 45 (Transpositions in Test 2) correlated only with Variable 46 (Wrong Word in Test 2), Variables 59 (Other Spelling Errors in Test 4), 61 (Additions in Test 4), and 62 (Transpositions in Test 4). Variable 46 correlated with Variables 49, 50, 52, 53, 54, 55, 57, 59, 61, 63, 64, 66, 68, and 69. These are most of the errors in Proofreading Tests 3 and 4, as well as the added errors made by the students while typing Test 4. Variable 47 (Omissions in Test 2) correlated only with Variables 59 and 61.

Variables 49, 50, and 52 correlated with Variables 53, 54, 55, 57, 59, 61, 62, 63, 64, 66, and 67. It appears that the same ability is required to find any type of error when proofreading is performed under conditions outlined in Proofreading Test 3.

Variable 53 (Transpositions in Test 3) correlated with many of the same variables as Variable 54. Variable 54 correlated with

Variables 55, 57, 59, 61, 62, 63, 64, 66, 67, and 69. Variable 55 (Omissions in Test 3) correlated with Variables 57, 59, 61, 62, 63, 64, and 69.

Variable 57 (Homonyms in Test 4) showed significant correlation with Variables 59, 61, 62, 63, 64, 66, 68, and 70. Variable 58 (Errors in Possessives) had no significant correlation with any of the variables. Variable 59 (Spelling Errors in Test 4) correlated with Variables 61 to 69 inclusive.

Variable 61 (Additions in Test 4) correlated with Variables 62, 63, 64, 66, 67, and 68. All these variables are classified as types of typing errors. Variable 62 (Transpositions in Test 4) correlated with Variables 63, 64, 67, and 68. Variable 63 (Wrong Word in Test 4) correlated with Variables 64, 66, 67, 68, and 69. Variables 64 to 69 are types of errors that the participants made while typing the correct words in Test 4.

Variable 64 (Omissions in Test 4) showed a significant correlation with Variables 66, 67, 68, and 69. Variable 66 (added Additions in Test 4) correlated only with Variable 68 (added Wrong Words in Test 4), but Variable 67 (added Transpositions in Test 4) correlated with all added errors in Test 4. Variable 68 (added Wrong Words in Test 4) correlated with Variable 69 (added Omissions in Test 4).

Of all the predictors, Spelling Score was the most significant predictor of proofreading performance. Considering the types of errors, the greatest correlation was found with spelling errors. The next most significant correlation was with errors that were classified as wrong word errors. The variables showing reading ability were not

significantly correlated with any of the errors in Proofreading Tests 1 and 2. Spelling related negatively with transposition errors in both Proofreading Tests 1 and 2. This indicates that spelling ability tends to improve one's ability to find one's own transposition errors.

Interpretation of the Findings

The data of this study were classified in three main categories. The first contained the scores recorded on the standardized reading test and the spelling test prepared by the researcher. The second included the proofreading test scores obtained on four proofreading tests of manuscript material of approximately equal length and difficulty and proofread under different conditions. The third contained supplemental data pertaining to the type of elementary school attended, sex, whether or not the participant was enrolled in a shorthand class, and the time of day that the proofreading tests were completed.

The four proofreading tests provided four measures of proofreading performance. Scores were kept of the errors missed, the errors found, and the time required to complete the test. Since Proofreading Tests 1 and 2 contained no errors, errors found or missed were errors that the participant had made while typing the copy under prescribed conditions. The total proofreading score was the total of the errors missed on the four proofreading tests. The range in the total number of errors missed extended from 6 to 137. This is shown in Table 40, page 109, of Appendix G. No participant was able to complete all four proofreading tests without error. A score of 6 errors missed from approximately 1,300 words proofread and corrected approaches perfection.

The type of errors missed were classified under two main headings: spelling errors and typewriting errors. While in typewritten material, all errors could be classified as typewriting errors, the researcher classified errors placed in the copy as spelling errors if they were errors in homonyms, possessives, or were included in lists of commonly misspelled words. Typewriting errors were further classified as follows: errors in addition of a word, letter or letters; errors in transpositions of words, letters, or syllables; errors in the substitution of the wrong word or letter; errors in omitting a letter, syllable, or word; and errors in capitalization by omitting a capital or inserting a capital.

The mean scores for each proofreading test have been presented. Analysis of variance showed that reading ability and spelling ability predict proofreading performance when proofreading performance is interpreted as errors missed or the time required to complete the test. The F value was significant at the .01 level or the .05 level in all but two analyses. These are shown in Table 4, page 25, and in Table 13, page 33. In all other cases, the null hypothesis was rejected.

Multiple correlations between the predictor variables and the criterion variables were described in Table 19, page 38. The students enrolled in shorthand found more typing errors in Proofreading Tests 3 and 4. The time of day the tests were completed did not prove to be significant to the study. Spelling correlated better with the different measures of proofreading performance than did reading ability.

When stepwise backward regression was performed for the measures of proofreading performance, it was found that spelling was the best

predictor of proofreading, with reading vocabulary and comprehension being the least important predictors. However, when time was considered as the criterion of proofreading performance, reading speed assumed more importance as a predictor, particularly when no typing was involved.

The means, standard deviations, and F values for reading ability and spelling ability were obtained according to the type of elementary school attended. These did not prove to be statistically significant.

A one-way analysis of variance was used to obtain the F ratio between the errors missed when students typed and made corrections working from perfect copy. There was no significant difference according to the time of day the tests were completed.

When the variables of errors and time for Proofreading Tests 1 and 2 were classified each test as a set of variables, canonical correlations were significant at the .01 level. A similar canonical correlation between Proofreading Tests 3 and 4 was significant at the .01 level.

The Related t Test showed a significant difference between the means of certain types of errors in Proofreading Test 1 as compared with Proofreading Test 2. Even more significant was the difference between the error means in Proofreading Test 1 compared with the errors that the participants made when typing the correct words in Test 4. The results are shown in Table 37, page 61.

Using the Related t Test, a significant difference was shown in the means of errors between Proofreading Tests 3 and 4. In each case, the results favored Proofreading Test 4 where errors placed in the

by the researcher were corrected during the typing. Fewer errors were missed when the students typed from the incorrect copy than when they corrected the errors using a pen.

When the types of errors were correlated with reading ability and spelling ability, it was found that spelling was the best predictor of proofreading performance. Using types of errors as predictors, the best predictor variable was the variable classified as errors involving a wrong letter or letters. If the participant missed errors classified as wrong word errors, he was likely to miss other types of errors.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter V summarizes the procedures used in the study and the findings resulting from the study. Based upon the findings, conclusions will be drawn, and recommendations will be made for further research.

Summary

The purpose of this study was to determine the relationships of selected language arts abilities to the criterion of proofreading performance. The subjects were senior high school students from selected counties in the Province of Ontario enrolled in a curriculum emphasizing business subjects.

The following statistical hypothesis, stated in null form, was proposed in this study:

With proofreading performance as the criterion variable, the variables of reading ability and spelling ability make no significant predictability, either singly or in combination.

The subjects in this study consisted of 221 senior high school students enrolled in nine high schools in the Counties of Lambton, Middlesex, and Elgin, in the Province of Ontario. The data were collected during March, 1971.

Reading ability was measured by four scores on the Nelson-Denny Reading Test: Reading Vocabulary, Reading Comprehension, Total

Reading Score, and Reading Speed.

Spelling ability was measured by recording the number of words spelled correctly from a list of 50 randomly selected words from a list of 200 commonly misspelled words published by Pitman Publishing Corporation.

Proofreading performance was measured by the scores of errors found, errors missed, and the time required for each of four proofreading tests. Two tests contained no errors. One was typed, the time recorded, and then proofread to make corrections. The other test was typed with corrections made as the test was typed. These two tests were adapted from a typing test published by the Royal Typewriter Company.

Two proofreading tests contained spelling and typing errors placed in the copy by the researcher. These tests were composed by the researcher. One of the tests was corrected with a pen, by writing in the correction. The other test was corrected as the participant read the copy for typing. The total proofreading score was the sum of the errors missed. Therefore, a low score was desirable.

The errors introduced into the copy were classified as spelling errors and typing errors. Spelling errors were errors in homonyms, errors in possessives, and other spelling errors commonly found in lists of misspelled words. Typing errors were classified as errors in additions, transpositions, the wrong word or letter, and omissions.

All four proofreading tests were of equal length, of the same syllabic intensity, and in manuscript form. To avoid the effect of one proofreading test on another, a random order for administering the tests was prepared and sent with the packet of material.

The statistical procedures consisted of multiple correlations, multiple regressions, analysis of variance, canonical correlations, and related t tests. The .01 and .05 levels were used for evaluating the significance of the results.

The findings of the study are summarized below in the same order in which they were presented in Chapter IV.

1. With proofreading performance measured by the number of errors found or missed, reading ability and spelling ability predicted proofreading performance in all cases except the errors found in Proofreading Test 2. The null hypothesis was rejected at the .05 level.

2. With proofreading performance measured by the time required to complete a test, reading ability and spelling ability predicted proofreading performance in all cases except the time required to complete Proofreading Test 1. The null hypothesis was rejected at the .05 level when proofreading performance was measured by the time required to complete the tests.

3. The product-moment correlation between reading and proofreading performance was significant at the .01 level. The same correlation was even more significant between spelling and proofreading performance.

4. Using the stepwise backward regression analysis, with the criterion variable being the number of errors missed, spelling was the most important predictor variable. With the criterion variable being the time required to complete the test, the best predictor was one of the measures of reading ability. All these correlations were either at the .01 or the .05 level.

5. According to the type of elementary school attended, the reading ability and spelling ability of the participants showed no significant difference at the .05 level.

6. There was no significant difference at the .05 level in the number of errors missed according to the time of day the tests were completed. The time of day when the tests were administered was, therefore, not considered a limitation to the study.

7. There was a significant canonical relationship at the .01 level between the set of variables representing Proofreading Test 1 and the set of variables representing Proofreading Test 2. There was a significant canonical relationship at the .01 level between the set of variables representing Proofreading Test 3 and the set of variables representing Proofreading Test 4.

8. When comparing the means of the types of errors in the four proofreading tests, there were significant differences between the means of transpositions and wrong words in Proofreading Tests 1 and 2. The difference in means was even greater between Proofreading Test 1 and the additional errors that the participants made in Proofreading Test 4. Significant differences in the means were shown in additions, transpositions, and omissions. In each case, the positive difference between the means showed that more errors were missed in Proofreading Test 1 than in Proofreading Test 2.

9. The means for all types of errors missed, except homonyms, were significantly higher for Proofreading Test 3 than for Proofreading Test 4. The significance was at the .01 level. This seems to indicate that the students read for more word detail in Proofreading Test 4.

10. Spelling was the most important predictor of proofreading performance. Spelling correlated with more types of errors than did any other variable. The most important error variable for correlating with other types of error variables was the variable classified as wrong word. Spelling correlated negatively with the variable classified as transposition errors in Proofreading Tests 1 and 2. This seems to indicate that spelling ability tends to improve the ability to detect one's own transposition errors. All these correlations were at the .01 level.

11. Using the tests for reading, spelling, and proofreading performance outlined in this study, there were many significant relationships at the .01 level and at the .05 level. The null hypothesis was, therefore, rejected at the .05 level. Reading ability and spelling ability predict proofreading performance for senior high school students enrolled in a curriculum emphasizing business subjects in selected high schools in the Province of Ontario, Canada.

Conclusions

In summary, the following major conclusions emerged from this study:

1. Reading ability and spelling ability predict proofreading performance. Spelling was a better predictor than reading when proofreading was measured by the errors missed. More significant correlations were found in predicting the errors that would be found in others' work than in finding one's own errors.

2. There is no significant difference in the reading ability of the participants according to the type of elementary school attended.

3. The time of day did not affect the scores obtained on the two proofreading tests that contained no errors.

4. Reading speed was an important predictor of proofreading performance when the time required to complete the test was considered the criterion variable.

5. There was a significant difference in the means of the types of errors missed when typing from correct copy. This indicates that the participants missed fewer errors when they proofread their work as they typed, making corrections as they were aware of their errors.

6. There was a significant difference in the means according to the types of errors missed in the two proofreading tests that contained spelling and typing errors. In both tests, the participants found more typing errors than they did spelling errors. They were able to find more spelling and typing errors when they typed the test than they could when they used a pen to make corrections on the test copy.

7. There was a significant difference in the means according to the types of errors that the participants introduced into Proofreading Test 4 while typing from a copy containing errors. This indicated that students proofread the copy more carefully, or that they typed with more accuracy than when typing from correct copy.

8. No student was able to proofread with 100 per cent accuracy.

9. When proofreading performance was measured as the number of errors missed, the predictor variables of reading ability and spelling ability account for approximately 54 per cent of the variance. The remaining 46 per cent is accounted for by other factors not considered in this study.

10. Shorthand students could locate more typing errors in others' work, but they were not better proofreaders of their own work.

11. A good vocabulary and the ability to comprehend what one reads were more beneficial for proofreading others' work than for detecting errors in one's own work.

Recommendations

The following recommendations are made for further research:

1. It is recommended that continued attempts be made to ascertain why it is easier to locate errors in others' work than in one's own work.

2. It is recommended that further studies be conducted to determine the relationship between the method by which a person learned to read and proofreading performance.

3. It is recommended that further research be conducted to determine whether different methods of proofreading are related to personality factors.

4. It is recommended that further studies be conducted to determine if there is an attitude toward proofreading that is related to proofreading performance.

The following recommendations are made for the careful consideration of teachers instructing prospective office workers:

1. It is recommended that more attention be given to the study of spelling in vocationally oriented classes.

2. It is recommended that teachers assist students to develop the ability to proofread and correct errors while typing, whether working from correct or incorrect copy.

APPENDIX A

(Letter sent to Directors of Education to request permission to secure data from selected schools.)

December 29, 1970

Dear Mr. .....:

This letter is to request permission to secure data from ....School for my doctoral study in business education at the University of North Dakota. The purpose of my study is to determine the correlation between ability in reading and spelling and ability in proofreading.

I would like to have the tests conducted with one or two classes from each of the schools. The students from the senior division will be given a standardized reading test, a standardized spelling test, and three short proofreading tests. The total time involved will be approximately two hours. This could be divided into two or three shorter periods of time. I will provide all the tests to be administered and will score the tests.

I am anxious to complete my dissertation before returning to my position at Sarnia Northern Collegiate Institute and Vocational School in September 1971. For this reason, I would appreciate having your decision at your earliest convenience so that I may forward the necessary materials to the schools, provided permission is granted.

Yours very truly,

(Mrs.) Eudene Stuart

The following Directors of Education were contacted to request permission to secure data from selected schools. A copy of the letter sent is shown on page 82.

Directors of Education

Mr. J. N. Given, Director of Education
Board of Education for the City of London
165 Elmwood Avenue
P. O. Box 5873
London, Ontario

Mr. N. L. Cheeseman
Director of Education
Lambton County Board of Education
280 Wellington Street
Sarnia, Ontario

Mr. W. W. Allen
Director of Education
Elgin County Board of Education
400 Sunset Drive
St. Thomas, Ontario

Mr. D. J. Cochrane
Huron County Board of Education
97 Shipley Street
Clinton, Ontario

Mr. J. A. Gummow
Director of Education
The Middlesex County Board of Education
747A Hyde Park Road
London 73, Ontario

(Typed copy of the letter received from Royal Typewriter Company granting permission to use Royal Typing Test)

February 19, 1971

3108 5th Avenue North
Grand Forkes
North Dakota 58201

Attention: Mrs. Eudene Stuart

Dear Mrs. Stuart:

Thank you for your letter of February 10th, at which time you requested permission to use our Royal Typing Test Number 10 dated June 1957, in your doctoral studies.

Permission is granted.

Sincerely yours,

Royal Typewriter Company

Anne Langlois
Advertising Manageress

AL:fh

The following is an extract from a letter sent to Miss Marion Angus of Pitman Publishing Corporation in New York by Mr. B. W. Canning of Sir Isaac Pitman Company Limited in London, England:

> The original list was derived from the research at Harvard and Columbia Universities some 15 years ago or more. I then applied this list to one thousand students for three months and analyzed how it came out in frequency terms. This meant that I made 16 changes from the original list, and so the 200 Commonly Misspelled Words is the result of that kind of validation.

APPENDIX B

The following is a list of the schools participating in the study along with the person to whom the packet of material was sent:

Mr. G. S. Knapp, Principal
North Middlesex District High School
Parkhill, Ontario

Mr. H. A. Posliff, Principal
Strathroy District Collegiate Institute
96 Kittredge Avenue
Strathroy, Ontario

Mr. W. D. Lancaster, Principal
West Elgin District High School
West Lorne, Ontario

Mrs. D. Stevenson, Commercial Director
Lambton Central Collegiate and Vocational Institute
Box 5100
Petrolia, Ontario

Mr. F. McNaught, Commercial Director
Northern Collegiate Institute & Vocational School
940 Michigan Avenue
Sarnia, Ontario

Mr. James Miller, Commercial Director
St. Clair Secondary School
340 Murphy Road
Sarnia, Ontario

Miss Jean Campbell, Commercial Director
North Lambton Secondary School
George Street
Forest, Ontario

Mr. James Irvine, Commercial Director
Sarnia Collegiate Institute & Technical School
275 Wellington Street
Sarnia, Ontario

Mr. Leo Langan, Commercial Director
Sarnia Central Collegiate Institute
281 East Street
Sarnia, Ontario

APPENDIX C

200 WORDS FREQUENTLY MISSPELLED[1]

absence
accidentally
accommodate
achieved
acknowledge
acquainted
addresses
aerial
aggravate
aggregate

agreeable
all right
amateur
among
analysis
Antarctic
anxiety
apparent
appearance
appropriate

Arctic
argument
arrangements
ascend
athletic
automation
awful
bachelor
beginning
believed

beneficial
benefited
breathe
budgeted
business
ceiling
certain
choice
clothes
colleagues

college
coming
committee

courteous
courtesy
criticism
deceive
decision
definite
desirable
desperate
disappeared
disappointed

disastrous
discipline
dissatisfied
efficiency
eighth
eliminated
embarrassed
emphasize
enthusiasm
equipped

especially
essential
exaggerated
excellent
exercise
exhausted
existence
expenses
experience
extremely

familiar
February
financial
foreign
forty
friend
fulfilled
gauge
genius
government

grammar
grievance
guard

hurriedly
hypocrisy
imagination
immediately
immigrate
incidentally
independent
indispensable
influential
intelligence

irresistible
knowledge
liaison
literature
livelihood
lose
losing
lying
maintenance
marriage

medicine
Mediterranean
miniature
minutes
mischievous
murmur
necessary
negotiate
niece
noticeable

occasional
occasionally
occurred
occurrence
omission
omitted
opinion
originally
parallel
parliament

pastime
permanent
permissible

preference
prejudice
preliminary
prestige
privilege
procedure
proceeds
professional
professor
pronunciation

proprietary
psychology
quiet
really
received
recognize
recommended
referred
relieved
repetition

restaurant
rhythmic
scarcely
secretaries
seize
sentence
separate
severely
shining
similar

sincerely
statutory
successfully
supersede
suppression
surprising
synonymous
tendency
tragedy
transferred

twelfth
unconscious
undoubtedly

---

[1] Pitman Journal, "200 Commonly Misspelled Words," Vol. LXVIII (October, 1970), p. 12.

comparative
competent
completely
conscientious
conscious
consistent
convenience
guardian
handkerchief
height
heroes
honorary
humorous
hungry
perseverance
personnel
physical
planning
pleasant
possesses
preceding
unnecessary
until
usually
valuable
view
Wednesday
woollen

SPELLING TEST

Students should use double spacing, number the words down the column starting with No. 1. Dictate the test by reading the word, reading the sentence, and then repeating the word. Students type the words in two columns of 25 each, numbering each word. Students may change the spelling of a word by x'ing out the word and typing the correct spelling.

Student's number must appear in the upper right-hand corner of the test.

1.	deceive	You can deceive a person by making a false statement.
2.	hypocrisy	Hypocrisy is the act of putting on a false appearance.
3.	incidentally	Incidentally, I expect to go to the game.
4.	amateur	He is an amateur at golf.
5.	surprising	It is surprising to me that he did go to the game.
6.	courtesy	Remember the courtesy of answering the telephone promptly.
7.	especially	It is especially important to be on time for your job.
8.	minutes	There are 60 minutes in an hour.
9.	absence	His absence from the meeting was noted.
10.	arrangements	Have you made travel arrangements for your trip to Europe?
11.	lose	No business can afford to lose customers.
12.	prejudice	She has a prejudice against modern furniture.
13.	imagination	Artists make use of their imagination.
14.	appearance	Personal appearance is important in obtaining a job.
15.	humorous	That was a humorous speech.
16.	irresistible	Her charm was irresistible.
17.	accidentally	I cut my finger accidentally.
18.	suppression	Troops were used in the suppression of the revolt.

19. murmur — A murmur went through the crowd.

20. medicine — Great advances have been made in medicine.

21. essential — Good food and sufficient rest are essential to good health.

22. exaggerated — He exaggerated the dangers.

23. privilege — It was my privilege to be a delegate to the convention.

24. seize — The dog tried to seize the parcel.

25. sentence — Can you punctuate the sentence correctly?

26. heroes — He was considered one of the heroes of the battle.

27. livelihood — He sold newspapers to earn his livelihood.

28. friend — He is a friend of mine.

29. accommodate — He wanted change for a dollar, but I could not accommodate him.

30. liaison — He acted as a liaison between the two departments.

31. mischievous — He was always a mischievous child.

32. handkerchief — He carried a white handkerchief in his pocket.

33. height — The height of the building is 100 feet.

34. physical — It is important to keep in good physical condition.

35. noticeable — The class has made a noticeable improvement in typewriting.

36. beneficial — Exercise is beneficial to health.

37. grammar — Learn the fundamentals of good grammar.

38. comparative — Air conditioning gives us comparative freedom from heat.

39. argument — He won the argument by producing statistics.

40. aggregate — The aggregate of sales for the week was $1,000.

41. expenses — His expenses on his car were paid by his company.

42. conscious — Although injured severely, he still remained conscious.

43. colleagues — The doctor asked one of his colleagues to assist him.

44. psychology — Psychology tries to explain why people act the way they do.

45. guard — A guard was placed in front of the building.

46. tendency — She has a tendency to speak too softly.

47. choice — The speaker made a wise choice of words in his address.

48. preference — He had a preference for bright colours.

49. fulfilled — He fulfilled his duties as president in a capable manner.

50. negotiate — I wish to negotiate a loan.

PROOFREADING TEST #1 -- This copy contains no errors.

Set your machine for double spacing, 70-stroke line, with 5-space paragraph indention. Record your number in the upper right-hand corner of your page, and the exact time you commenced typing this copy. Type a copy making no corrections. Record the time you completed typing. Proofread your copy and correct errors. Record the time you completed proofreading the copy. Submit this test and your copy to your instructor.

.....

Guiding the decisions and choices of a mature person is a philosophy of life, a sense of what he wants to be. There are certain basic values and virtues that need to be preserved at all costs--for example, the feeling that life has a purpose and the belief that there is something in one's judgments of justice and truth which is in harmony with the nature of the universe.

The mature person need not be a confirmed conformist. He may be a rugged individualist, but he will be as rugged in his adherence to basic principles as he is in self-reliance. He will recognize, but will not be afraid of, the fact that there are three great questions in life which he must answer over and over again. Is it right or wrong? Is it true or false? Is it beautiful or ugly? In answering these questions a man will find principles of far more value to him than a library of books, or a den decorated with diplomas.

The principles contribute to his maturity by enlarging thinking, by helping him to avoid confusion, by rescuing him from prolonged debate. They give him a base for decision and action. They are like the north star, the compass, and the lighthouse to a sailor. They keep him on his course despite winds and current and weather. Some people confuse principles with rules. A principle is something inside one; a rule is an outward restriction. To obey a principle you have to use your mental and moral powers; to obey a rule you have only to do what the rule says.

The man of mature character is a man who can be relied upon. His qualities are predictable. He is a good security risk for himself, his family, his employer and his neighbours. The mature man does not transfer the blame for personal misfortune to anyone else--his parents, his employers, his circumstances.

(Adapted from Royal Typing Test)

PROOFREADING TEST #2 -- This copy contains no errors.

Set your machine for double spacing, 70-stroke line, with 5-space indention for paragraphs. Record your number in the upper right-hand corner of your page, and the exact time you commenced typing this copy. Type the copy correcting any errors you make as you type. Upon completion, proofread and correct any errors missed. Record the exact time you submitted your copy to your instructor.

.....

To refuse to risk taking responsibility where failure is possible is a childish course. To pass on responsibility for what we do to someone else is to bring shame upon our human dignity. If we are to learn to be mature, we must accept the willingness to fail as well as the ability to succeed.

Self-deception cannot be tolerated in maturity. We smile pityingly at the conceits of Don Quixote, who was able to deceive himself that the windmills were giants. In our own age, we see men who will not look at things as they are, but as they wish them to be. Some of us wear masks to delude ourselves or others. Anyone may put off decision-making by the simple device of donning a mask under cover of which he analyses and re-analyses a problem, postponing the moment he fears.

The mind needs to be stored with significant facts which we observe. Maturity has its say about the care and zeal with which we collect this knowledge. When we come to use what has been stored, we use another element in maturity. This is self-control. We assay the facts and delay our actions until we decide just how and how well they will meet the necessities of the situation. Self-control in the mature person means abandonment of the childlike immaturities shown in anger, hate, and cruelty. Blustering and weight-throwing are not signs of maturity. It is not mature to push a situation to the point where it can no longer hold, but has to give way under the pressure we inflict upon it. Self-control is a factor in self-confidence. The backbone of confidence is one's faith in the validity of one's own judgment.

A mature person is not unwisely self-sure. He does not underestimate the chances of missing an open goal. He is not led astray by conceit into an unproved belief in his own ability.

(Adapted from Royal Typing Test)

Student No.

Time Commenced:
Time Ended:

PROOFREADING TEST #3 -- This test contains errors.

Record your number in the upper right-hand corner of this sheet. Read the copy encircling any words that are incorrect. Write the correction above the word circled. Record beginning and ending time on this sheet before submitting it to your instructor.

.....

To be a sucess as a secretery in the wordl of work, it is esential that transcription be corect. No emlpoyer wants to recieve or send leters that have erors in grammer, speeling, or typeing. Teh stenographer must excercise care so that she sees mistakes in word useage, or in the sentance structure. It can be very agravating to the personal of a office to find errors or omissionns in correspondance that has allready been maled to a customer.

The maintainance of goood public relations is, of coarse, synomynous with success in ayn businnes. The inexpereinced secretary may decieve herself if she is not a eficient proofreader. She maay beleive that she is a more competant workar than she realy is. If she shuold make an error in a quotatin to a custmoer, it may, indeed, proove costly to the firm, for it may resutl in a disapointed customer. She should be certin that she has checking the acuracy of her work before submiting letters to her employer for his signiture.

Skil in languge may be acheived by reeding books, and magizines, and by conservation with collegues who posses a good nowledge of both writen and spoken English. When an unfamilar word is dictatated that is knew to her, to frequently the begining stenographer make a desparate atemt to transcribe the word without checking the speeling of the word in a dictionery. It is recomended that a list of unusaul and unfamiliar words be prepered adn studied. It is note alright to guess at the spelling or pronounciation of the word. She must make certain than she has spellled the word corectly. A good vocabulery wil give the ofice worker more prestege with her coleagues and more confidance and competance.

If an stenorgapher is concientious, she wil be enthusistic about her job even thought occassionally their is a grate deal of repition. The hight of praise ist to have it siad than she is indispensible.

PROOFREADING TEST #4 -- This copy contains errors.

Set your machine for double spacing, 70-stroke line, with 5-space indention for paragraphs. Record your number in the upper right-hand corner of your page, and the exact time you commenced typing this copy. Type this test, correcting errors you find in the copy. Upon completion, proofread and correct any errors you missed. Record the exact time you submitted your copy to your instructor.

.....

When you course in business is nearing compleetion, you should make a descision about you future. Amoung the choices available to you is the enterance intoo the wordl off work Weather or not you descide to seak employment wiht a large coporation, a service busness, or as a resceptionist with a proffesional person, you must make applicantion for the possition.

Their is genneral agrement that certian qualities are realy esential to sucess in a position. A good nowledge of the subjects covered in your coarse in schoool is neccesary if you except to be eficient in you job. For this reason, during the school year endevour to obtane more than passing grades or minimimum requirements for the subject. Ofen a student will be will be satisfied with less than his best efort.

When you apply for a job, the intreviewer you meet will try too rate you as a possible future worker in the office. There is more too a job that typing forms, or filling letters. There is the daily co-opertion with ohter poeple in the ofice, and a freindly and courteus maner toward the peolpe who entre you office. No busness can suceed without custoemers. No business wishes to loose its' customers.

A sents of humor is a valueable asset for success in any business. To be able to lauf at onself will help to maintaine gooood interpersonnal relations in the ofice, and goood mental helth for the individul.

Integity is so imprtant. This involes more that being truely honst in maters of monney. It means also honesty in the utilizitation of time. Ariving late for work, extendded cofee brakes show that the person is les that honst with his employer.

Remembr tp be enthuiastic. You can develope this trate. Lack of enthusism has at times resulted in a tendncy to show little intrest in the job.

Immagination is neccessary if the individul is to be creative in teh job. Perhhaps most important, thought, is a possitive atitude toward work.

APPENDIX D

DATA SHEET

THE RELATIONSHIP BETWEEN SELECTED LANGUAGE ARTS
AND PROOFREADING PERFORMANCE

(1-3) Student No. _____ (This number must appear on all tests.)
(4-1) Male _____
(5-1) Female _____

Are you presently enrolled in shorthand?.....(6-1) Yes -----
(7-1) No -----

What type of elementary school did you attend?..(8-1) one-room -----
(9-1) township -----
(10-1) town or city -----

Place a check mark after each test when you have completed it.
Submit this data sheet on completion of all tests.

		DO NOT WRITE IN THIS SPACE			
(11-25) Nelson-Denny Reading Test	__	.....	.....	.....	.....
(26-28) Spelling Test	__	.....	.....	.....	.....
(29-36) Proofreading Test 1	__	.....	.....	.....	.....
(37-43) Proofreading Test 2	__	.....	.....	.....	.....
(44-51) Proofreading Test 3	__	.....	.....	.....	.....
(52-59) Proofreading Test 4	__	.....	.....	.....	.....

THE RELATIONSHIP BETWEEN SELECTED LANGUAGE ARTS
AND PROOFREADING PERFORMANCE

School..... School Number.....

Instructions to the Commercial Director

This package contains:

..... Nelson-Denny Reading Test (Part A)

..... Answer Sheets for Nelson-Denny Reading Test

..... Instructor's Manual for Reading Test

..... Data Sheets (for students to complete)

..... Instructor's Copy of Spelling Test (2 pages)

..... Proofreading Test #1 (1 page)

..... Proofreading Test #2 (1 page)

..... Proofreading Test #3 (1 page)

..... Proofreading Test #4 (1 page)

..... Instructions for Administering Tests (3 pages)

Please send me an invoice for the paper supplied by your school, the postage, and any other expenses incurred in the administration of the tests.

Results will be sent to you as soon as they are available.

Return completed and unused materials to: Mrs. Eudene Stuart
Business Education Dept.
University of North Dakota
Grand Forks, North Dakota

Copies of Reading Tests, and Proofreading Tests should be collected and returned with completed and unused materials.

THE RELATIONSHIP BETWEEN SELECTED LANGUAGE ARTS
AND PROOFREADING PERFORMANCE

School..... School Number.....

Instructions for Administering the Tests

1. Students should have the following materials:
   1 Data Sheet
   1 No. 2 pencil
   1 sheet $8\frac{1}{2}$ x 11
   1 Typing eraser
   3 sheets $8\frac{1}{2}$ x 13
   1 pen

Note: Dictionaries are not to be used for any of the tests.

Note: Student number must appear on all tests. The same number is used for all tests.

DATA SHEET

This sheet is to be filled out by the students before commencing any tests. As tests are completed, the student checks off the test.

The student number remains the same throughout the tests. It is not necessary for the student to include his name on any test, but his number must appear in the right-hand corner at the top of the page. The numbers assigned include the number of the school. When two classes are involved in testing, the second class will commence numbering at - 51.

Please administer the tests in this order:

1. Nelson-Denny Reading Test (Time: Approx. 30 minutes)
2. Spelling Test (Time: Approx. 30 minutes)
3. Proofreading Test # (Time: Approx. 20 minutes)
4. Proofreading Test # (Time: Approx. 20 minutes)
5. Proofreading Test # (Time: Approx. 20 minutes)
6. Proofreading Test # (Time: Approx. 20 minutes)

The approximate time required for each test is as indicated above. Allow sufficient time for each participant to complete each test.

The tests must be administered in the order assigned. Two tests may be administered in one class period if it works into the schedule, or they may be spread over a few days.

Please collect all test copies and return.

Typewriters may be either manual or electric, with pica or elite type.

Special Instructions for Administering Tests

The student number and the time of day should appear in the upper right-hand corner of each test. For example, John Doe's test paper might look like this:

No. 5-07
2:15
2:24

(This indicates that he was assigned number 7 in school 5, that he commenced the test at 2:15 and completed it at 2:24.

ALLOW SUFFICIENT TIME FOR EACH PARTICIPANT TO COMPLETE EACH TEST.

BE CERTAIN THAT THE STUDENT NUMBER AND THE TIME OF DAY APPEAR ON EACH SHEET.

READING TEST

(Approx. 30 Min.)

For machine scoring, students should use No. 2 pencils. Administer according to the instructions accompanying the test. BE CERTAIN THAT STUDENT NUMBER AND TIME OF DAY APPEAR ON ANSWER SHEET. Collect all test booklets and answer sheets.

SPELLING TEST

(Approx. 30 Min.)

This test contains 50 words. Students should set the machine for double spacing, and number the words typing the first 25 down the first column, and the second 25 down the second column as:

(Provide 1 sheet $8\frac{1}{2}$ x 11 for each student)

No. 5-07
11:01
11:31

1. answer
2. number

26. collect
27. ~~xxxx~~ book

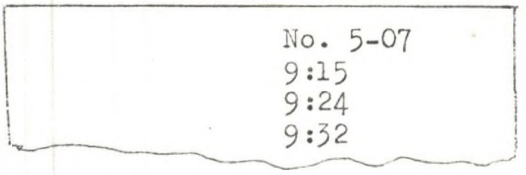
Students may correct errors in typing or spelling by x'ing out the word and typing the correct answer on the same line. Administer according to instructions with the test. BE CERTAIN THAT STUDENT NUMBER AND TIME OF DAY APPEAR ON ANSWER SHEET.

PROOFREADING TEST #1

(Approx. 20 min.)

(Provide 1 sheet 8½ x 13 for each student.)

Students record their number and the time of day in the upper right-hand corner. This test contains NO errors. Students type the test making no corrections, and record the time they completed the test. They immediately proofread it making corrections in their own typing. Erasers or correction tape may be used. Score will be on the number of errors made but not corrected. Neat corrections will not be scored against the typist. The student records the time he finished proofreading and correcting his work. BE CERTAIN THAT STUDENT NUMBER AND TIME OF DAY APPEAR ON ANSWER SHEET. Collect all tests and students' copy.



PROOFREADING TEST #2

(Approx. 20 min.)

(Provide 1 sheet 8½ x 13 for each student.)

This test contains NO errors. Students type the test and correct any errors they make as they type. When they complete the test, they should proofread it and make any further corrections. Score will be on the number of errors made but not corrected. Neat corrections will not be scored against the typist. BE CERTAIN THAT STUDENT NUMBER AND TIME OF DAY APPEAR ON ANSWER SHEET. Collect all tests and students' copy.

PROOFREADING TEST #3

This test contains SPELLING and TYPING errors. Students will circle errors and write corrections neatly above the error. Time of day will be recorded when the test was commenced and when it was completed. Score will be the number of errors not corrected. DICTIONARIES ARE NOT TO BE USED. Collect all test papers. BE CERTAIN THAT STUDENT NUMBER AND TIME OF DAY APPEAR ON ANSWER SHEET.

PROOFREADING TEST #4

(Approx. 20 min.)

(Provide 1 sheet 8½ x 13 for each student.)

This test contains SPELLING and TYPING errors. Students will type the test making corrections as they type. Students will also proofread after completing the typing and make any additional corrections. Score will be on the number of errors not corrected. Neat corrections will not be scored against the typist. DICTIONARIES ARE NOT TO BE USED. Collect all test papers. BE CERTAIN THAT STUDENT NUMBER AND TIME OF DAY APPEAR ON ANSWER SHEET.

My sincere appreciation to staff and students for agreeing to participate.

APPENDIX E

RANDOM ORDER FOR ADMINISTERING PROOFREADING TESTS 1 - 4

In order to avoid the effect of one proofreading test on another, a random order for administering the tests was prepared. The following order was the result:

School No. 1	Proofreading Test 2, 3, 4, 1
School No. 2	Proofreading Test 3, 4, 2, 1
School No. 3	Proofreading Test 2, 1, 4, 3
School No. 4	Proofreading Test 1, 3, 4, 2
School No. 5	Proofreading Test 1, 2, 4, 3
School No. 6	Proofreading Test 3, 1, 2, 4
School No. 7	Proofreading Test 2, 3, 1, 4
School No. 8	Proofreading Test 2, 3, 1, 4
School No. 9	Proofreading Test 2, 1, 3, 4

APPENDIX F

Legend

H	Homonyms	TA	Additions
P	Possessives	TO	Omissions
S	Spelling	TT	Transpositions
		TWW	Wrong Word

Student No.

Time Commenced:
Time Ended:

PROOFREADING TEST #3 -- This test contains errors.

Record your number in the upper right-hand corner of this sheet. Read the copy encircling any words that are incorrect. Write the correction above the word circled. Record beginning and ending time on this sheet before submitting it to your instructor.

.....

To be a sucess as a secretery in the wordl of work, it is esential that transcription be corect. No emlpoyer wants to recieve or send leters that have erors in grammer, speeling, or typeing. Teh stenographer must excercise care so that she sees mistakes in word useage, or in the sentance structure. It can be very agravating to the personal of a office to find errors or omissionns in correspondance that has allready been maled to a customer.

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Skil in languge may be acheived by reeding books, and magizines, and by conservation with collegues who posses a good nowledge of both writen and spoken English. When an unfamilar word is dictatated that is knew to her, to frequently the begining stenographer make a desparate atemt to transcribe the word without checking the speeling of the word in a dictionery. It is recomended that a list of unusaul and unfamiliar words be prepered adn studied. It is note alright to guess at the spelling or pronounciation of the word. She must make certain than she has spellled the word corectly. A good vocabulery wil give the ofice worker more prestege with her coleagues and more confidance and competance.

If an stenorgapher is concientious, she wil be enthusistic about her job even thought occassionally their is a grate deal of repition. The hight of praise ist to have it siad than she is indispensible.

*Repeated--counted only once.

PROOFREADING TEST #4 -- This copy contains errors.

Set your machine for double spacing, 70-stroke line, with 5-space indention for paragraphs. Record your number in the upper right-hand corner of your page, and the exact time you commenced typing this copy. Type this test, correcting errors you find in the copy. Upon completion, proofread and correct any errors you missed. Record the exact time you submitted your copy to your instructor.

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Their is genneral agrement that certian qualities are realy esential to sucess in a position. A good nowledge of the subjects covered in your coarse in schoool is neccesary if you except to be eficient in you job. For this reason, during the school year endevour to obtane more than passing grades or minimimum requirements for the subject. Ofen a student will be will be satisfied with less than his best efort.

When you apply for a job, the intreviewer you meet will try too rate you as a possible future worker in the office. There is more too a job that typing forms, or filling letters. There is the daily co-opertion with ohter poeple in the ofice, and a freindly and courteus maner toward the peolpe who entre you office. No busness can suceed without custoemers. No business wishes to loose its' customers.,

A sents of humor is a valueable asset for success in any business. To be able to lauf at onself will help to maintaine gooood interpersonnal relations in the ofice, and goood mental helth for the individul.

Integity is so imprtant. This involes more that being truely honst in maters of monney. It means also honesty in the utilizitation of time. Ariving late for work, extendded cofee brakes show that the person is les that honst with his employer.

Remembr tp be enthuiastic. You can develope this trate. Lack of enthusism has at times resulted in a tendncy to show little intr in the job.

Immagination is neccessary if the individul is to be creative in teh job. Perhhaps most important, thought, is a possitive atitude toward work.

* Repeated--error counted only once.

APPENDIX G

TABLE 40

SCORES ATTAINED BY THE PARTICIPANTS ON READING, SPELLING, AND PROOFREADING TESTS

Personal Data — Scores entered on IbM Cards

RESULTS OF PROOFREADING, READING AND SPELLING TESTS

1	2	3	4	5	6	7	8	9	0	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
101	0	1	0	1	0	1	0	2	26	36		62	639	38	11	14	8	3	11	5	1	13	17	7	13	33	43	5	2	16	45	50	46	53
102	0	1	1	0	0	0	1	2	17	34		51	161	32	8	2	10	5	15	9	1	13	23	6	11	27	44	11	3	17	39	47	46	56
104	0	1	1	0	0	0	1	2	25	32		57	226	40	5	12	12	3	15	6	7	15	11	2	14	39	48	2	4	14	48	48	38	60
106	0	1	0	1	0	0	1	2	13	24		37	275	25	0	0	17	3	20	1	2	16	23	16	15	27	34	14	7	30	36	44	62	81
107	0	1	1	0	0	0	1	2	13	22		35	174	28	8	22	11	4	15	10	25	13	29	25	11	21	25	21	15	18	29	38	137	57
108	0	1	1	0	0	1	0	2	14	20		34	226	25	0	27	7	7	14	4	14	17	36	16	16	14	34	14	5	19	36	45	112	66
109	0	1	1	0	0	0	1	2	43	50		93	327	33	20	17	7	11	18	0	2	10	9	2	16	41	48	5	2	16	45	49	37	60
110	0	1	1	0	0	0	1	2	30	24		54	262	34	3	7	14	1	15	1	1	16	14	11	13	36	40	7	1	16	44	50	41	60
111	0	1	1	0	0	1	0	2	13	26		39	226	23	5	1	13	6	19	5	1	20	20	12	15	30	38	14	6	26	37	46	54	80
113	0	1	1	0	0	1	0	2	19	32		51	218	34	13	3	8	6	14	6	1	11	14	3	13	36	47	6	2	15	44	48	29	53
115	0	1	1	0	0	0	1	2	31	42		73	318	39	7	2	9	4	13	8	3	11	17	4	14	33	46	5	9	14	45	41	40	52
117	0	1	0	1	0	1	0	2	16	26		42	115	23	10	14	16	2	18	14	4	19	28	16	12	23	34	22	9	21	28	44	93	70
118	0	1	0	1	0	1	0	2	30	36		66	250	23	10	1	11	4	15	8	0	14	29	12	16	21	38	16	5	17	34	45	63	62
119	0	1	0	1	0	0	1	2	23	26		49	226	33	13	2	8	6	14	4	0	13	18	6	16	32	44	4	1	20	46	49	31	63
120	1	0	1	0	0	1	0	2	28	32		60	349	29	10	4	10	7	17	15	2	16	23	8	13	27	42	9	3	20	41	48	49	66
121	0	1	0	1	0	0	1	2	19	42		61	349	25	13	4	10	5	15	7	2	14	18	10	14	32	40	9	5	15	41	45	48	58
122	0	1	1	0	0	1	0	2	20	46		66	226	36	2	0	9	5	14	1	1	11	17	2	19	33	48	5	2	18	45	48	27	62
123	0	1	1	0	0	0	1	2	8	20		28	287	22	2	2	10	2	12	4	0	14	19	12	18	31	38	23	6	21	27	45	62	65
124	0	1	1	0	0	1	0	2	25	44		69	195	28	8	1	13	13	26	4	10	16	28	4	17	23	46	13	4	31	37	46	60	90
125	0	1	1	0	0	1	0	2	25	42		67	338	32	4	1	9	3	12	4	12	12	18	8	13	32	42	12	6	13	38	45	57	50
126	0	1	0	1	0	0	1	2	18	32		50	238	29	2	4	9	4	13	1	3	13	23	17	15	27	33	10	4	18	40	47	61	59
127	0	1	1	0	0	1	0	2	17	34		51	262	38	2	2	9	5	14	0	1	11	13	6	14	37	44	4	1	18	46	49	27	57
128	0	1	1	0	0	0	1	2	19	36		55	250	24	5	3	12	6	18	4	0	14	32	12	15	18	38	12	3	24	38	47	62	71
130	0	1	1	0	0	0	1	2	14	28		42	238	33	6	2	9	5	14	4	29	11	26	14	13	24	36	11	5	19	39	48	87	57
131	0	1	0	1	0	1	0	2	21	24		45	216	33	9	1	9	5	14	3	3	13	20	5	15	30	45	10	2	18	40	48	41	60
201	0	1	1	0	0	1	0	3	35	40		75	216	44	8	1	11	7	18	10	2	16	13	3	18	37	47	2	1	21	48	49	22	73
202	0	1	1	0	1	0	0	3	31	30		61	314	34	10	3	9	8	17	1	2	13	19	7	14	31	43	6	2	21	44	48	39	65
204	0	1	1	0	1	0	0	3	21	28		49	216	38	4	1	10	5	15	7	1	13	15	12	18	35	38	6	0	22	45	50	35	68
205	0	1	0	1	1	0	0	3	18	22		40	238	41	2	0	8	3	11	3	0	11	13	7	18	37	43	2	0	14	48	50	24	54
206	0	1	0	1	0	0	1	3	31	34		65	226	35	4	0	12	4	16	1	2	14	27	11	13	23	39	9	1	19	42	49	50	62
207	0	1	1	0	0	0	1	3	24	24		48	216	37	2	14	10	4	14	3	0	13	21	9	16	29	41	8	0	20	42	50	52	63
208	0	1	1	0	1	0	0	3	17	34		51	262	38	1	0	9	4	13	0	0	12	12	7	16	38	43	4	2	19	46	50	25	60
209	0	1	1	0	0	0	1	3	21	30		51	250	40	4	2	8	5	13	6	1	14	16	5	17	34	45	1	4	20	49	47	29	64
210	0	1	1	0	0	1	0	3	15	24		39	250	46	4	0	8	4	12	3	1	13	15	6	15	35	44	1	1	13	49	49	22	53
211	0	1	1	0	1	0	0	3	16	44		60	250	27	4	5	11	6	17	3	3	12	31	20	13	19	30	11	4	21	39	49	74	63
212	0	1	1	0	1	0	0	3	16	30		46	226	42	3	0	8	4	12	2	1	11	32	11	9	18	39	9	2	21	41	48	55	53
213	0	1	1	0	0	1	0	3	17	20		37	161	44	1	0	9	3	12	2	0	14	15	8	13	35	42	2	0	16	48	50	25	55
214	0	1	1	0	0	0	1	3	19	34		53	238	32	1	0	8	3	11	1	1	13	27	11	15	23	39	13	10	19	37	43	62	58
215	1	0	0	1	0	0	1	3	34	58		92	250	38	1	1	11	6	17	3	1	16	22	8	15	28	42	3	1	20	47	49	36	68
216	0	1	1	0	1	0	0	3	25	42		67	338	42	5	2	11	5	16	7	0	17	12	6	13	38	44	3	2	22	47	48	25	68
217	0	1	1	0	0	0	1	3	10	24		34	250	43	4	2	11	5	16	4	0	12	24	5	14	26	45	5	3	20	45	47	39	62
218	0	1	1	0	0	1	0	3	30	40		70	338	38	13	3	9	8	17	17	11	12	21	7	8	29	43	8	3	19	42	47	53	56
251	0	1	0	1	0	1	0	3	26	36		62	238	41	0	0	10	3	13	1	0	15	12	3	16	38	47	3	4	20	47	47	22	64
252	0	1	0	1	0	0	1	3	15	34		49	207	19	5	6	7	5	12	5	1	17	34	18	11	16	32	21	2	23	29	48	82	63
255	0	1	0	1	0	0	1	3	43	38		81	600	48	1	1	8	3	11	3	0	12	9	11	9	41	39	2	1	13	48	49	24	45
256	0	1	0	1	1	0	0	3	12	30		42	207	27	4	3	11	5	16	3	1	15	17	11	16	33	39	12	3	19	38	47	47	66
257	0	1	0	1	0	0	1	3	16	36		52	226	34	11	4	8	7	15	7	2	11	21	9	13	29	41	14	6	19	36	45	56	58
258	0	1	0	1	0	0	1	3	11	28		39	238	26	3	3	10	5	15	4	2	14	23	14	15	27	36	18	12	22	32	40	72	66
259	0	1	0	1	0	0	1	3	25	22		47	207	29	8	5	9	3	11	10	3	19	22	5	12	28	45	9	4	24	42	47	48	66
260	0	1	0	1	1	0	0	3	22	32		54	216	45	9	1	12	5	17	9	2	15	3	3	22	47	47	2	4	20	48	47	15	74
261	0	1	0	1	0	0	1	3	12	14		26	185	26	3	1	14	5	19	2	0	19	29	16	15	21	34	10	6	27	40	45	62	80
262	0	1	0	1	1	0	0	3	18	34		52	298	33	1	0	9	3	12	1	0	15	23	12	13	27	38	9	2	22	41	48	46	62
263	0	1	0	1	0	0	1	3	15	42		57	185	29	3	0	14	6	20	2	0	12	15	5	20	35	45	8	5	20	42	46	33	72
264	0	1	0	1	1	0	0	3	20	42		62	327	39	4	3	8	5	13	3	1	13	21	11	11	29	39	10	5	21	40	45	51	58
265	0	1	0	1	0	1	0	3	23	26		49	226	29	12	6	8	7	15	12	3	15	25	12	14	25	38	9	9	20	41	43	64	64
267	0	1	0	1	0	0	1	3	14	34		48	238	45	11	3	14	10	24	2	3	18	8	6	21	42	44	6	2	22	44	48	28	85
268	0	1	0	1	1	0	0	3	17	38		55	262	45	4	1	12	6	18	3	0	13	5	3	16	45	47	1	2	25	49	49	12	72
269	0	1	0	1	0	1	0	3	22	28		50	195	36	2	0	9	5	14	3	0	13	23	5	18	27	45	8	1	20	43	49	37	65
270	0	1	0	1	1	0	0	3	45	48		93	318	42	6	1	9	5	14	4	0	13	20	2	20	30	48	5	1	15	45	49	29	62
271	0	1	0	1	0	0	1	3	25	34		59	250	41	5	4	10	5	15	3	2	15	34	15	9	16	35	5	2	14	45	49	62	53
272	0	1	0	1	1	0	0	3	22	24		46	185	29	1	9	10	3	13	9	6	17	16	10	18	34	40	19	13	18	31	40	73	66
273	0	1	0	1	1	0	0	3	20	26		46	206	31	4	0	11	5	16	6	1	15	27	10	17	23	40	9	0	12	41	50	47	60
274	0	1	0	1	1	0	0	3	18	32		50	250	41	3	0	9	4	14	5	0	14	14	11	20	36	39	3	2	20	47	48	30	68
275	0	1	0	1	0	1	0	3	19	28		47	250	45	1	1	8	3	11	0	2	9	8	5	14	42	45	4	0	16	46	50	20	50
276	0	1	0	1	1	0	0	3	18	30		48	238	42	3	1	11	5	16	1	1	10	11	8	13	39	42	2	2	27	48	48	25	66
277	0	1	0	1	0	0	1	3	29	36		65	287	39	0	12	12	4	16	1	4	12	16	7	10	34	43	10	10	22	41	45	59	60
302	0	1	1	0	0	1	0	1	24	32		56	115	37	4	1	9	3	12	3	0	12	17	7	14	33	43	16	2	18	34	48	43	56
303	0	1	0	1	0	1	0	1	11	20		31	185	30	2	0	11	4	15	0	0	14	16	7	26	34	43	18	4	27	32	46	45	82
304	0	1	0	1	0	0	1	1	24	38		62	250	37	10	0	10	6	16	3	2	13	11	3	18	39	47	3	1	26	47	49	20	73
305	0	1	0	1	0	1	0	1	25	32		57	318	38	3	2	9	4	13	8	0	16	7	2	22	43	48	3	0	22	47	50	14	73
306	0	1	0	1	0	1	0	1	16	28		44	226	22	2	16	9	5	14	8	3	17	26	15	14	24	35	13	4	31	37	47	77	76
308	0	1	1	0	1	0	0	1	20	36		56	207	42	1	0	7	5	12	3	11	17	11	3	21	39	47	2	1	24	48	49	28	74
309	0	1	0	1	0	0	1	1	13	38		51	195	33	1	1	10	3	13	5	2	17	14	8	18	36	42	18	6	28	32	46	49	76
310	0	1	0	1	0	0	1	1	16	14		30	298	32	6	1	12	4	16	6	1	14	16	10	23	34	41	10	4	25	40	48	42	78
311	0	1	0	1	1	0	0	1	30	48		78	287	37	5	0	9	6	15	5	0	17	11	2	19	39	48	6	0	19	44	50	19	70
312	0	1	1	0	0	0	1	1	33	44		77	287	41	2	0	12	3	15	3	0	15	6	4	20	44	46	1	2	22	49	48	13	72
314	0	1	0	1	0	1	0	1	13	26		39	275	26	0	1	10	2	12	2	22	14	20	18	13	30	32	14	5	24	36	45	80	63
315	0	1	0	1	0	0	1	1	18	32		50	318	37	1	4	8	4	12	4	3	15	15	7	17	35	43	9	1	25	41	49	39	69

TABLE 40--Continued

Personal Data											Scores on IBM Cards																				
402	0	1	0	1	0	0	1	3	20	34	54	250	35	5	3	8	3	11	8	0	13	27	17	19	23	33	8	5	16	42	48	60	59
407	0	1	0	1	0	1	0	3	29	48	77	338	25	6	7	11	6	17	14	7	16	27	22	7	23	29	14	24	14	36	42	101	54
408	0	1	0	1	0	1	0	3	22	26	48	262	34	14	5	11	6	17	12	9	19	23	18	19	27	32	15	12	18	35	43	82	73
409	0	1	1	0	0	0	1	3	27	26	53	174	35	3	1	14	1	15	10	1	14	34	26	17	16	24	10	7	17	40	46	79	63
416	0	1	0	1	0	1	0	3	26	30	56	436	34	4	1	8	2	10	7	2	10	19	8	20	32	42	6	4	10	44	46	39	50
418	0	1	1	0	0	1	0	3	21	28	49	238	36	6	3	14	5	19	11	0	14	31	17	19	19	33	7	3	16	43	48	61	68
422	0	1	0	1	0	0	1	3	18	32	50	195	34	4	5	13	3	16	11	4	16	27	13	19	23	37	19	5	20	31	46	73	71
425	0	1	0	1	0	0	1	3	16	42	58	250	27	8	1	13	4	17	16	3	15	24	11	20	26	40	12	3	20	38	47	54	72
451	0	1	0	1	0	0	1	6	34	20	54	174	27	0	3	11	3	14	6	6	15	21	15	9	29	35	13	4	15	37	49	62	58
452	0	1	0	1	0	0	1	6	25	34	59	327	44	2	5	9	7	16	7	20	11	16	10	13	34	40	4	0	18	46	50	55	58
453	0	1	0	1	0	0	1	6	22	30	52	250	32	7	1	7	8	15	8	0	12	28	13	12	22	37	14	7	18	36	43	63	57
455	1	0	0	1	0	0	1	6	9	20	29	185	32	11	3	9	7	16	10	10	14	27	16	13	23	34	9	8	20	41	45	73	63
456	0	1	1	0	1	0	0	6	22	38	60	349	36	11	1	9	7	15	6	1	11	11	8	12	39	43	6	2	20	44	48	29	58
458	0	1	0	1	0	0	1	6	10	26	36	238	35	4	1	10	4	14	7	3	10	27	5	10	23	45	14	5	14	36	47	55	48
460	0	1	1	0	0	1	0	6	14	26	40	359	27	12	13	10	8	18	11	54	10	27	7	13	23	43	17	7	20	33	43	125	61
462	0	1	1	0	0	0	1	6	21	34	55	318	44	5	3	10	6	16	13	1	15	3	2	14	47	48	3	1	14	47	49	13	59
463	0	1	1	0	0	0	1	6	32	36	68	349	41	0	5	12	3	15	6	5	16	8	8	11	42	42	5	5	18	45	46	36	60
464	0	1	0	1	0	0	1	6	18	30	48	298	41	2	6	11	6	17	0	2	10	10	9	14	40	41	6	4	19	44	46	37	60
465	0	1	0	1	0	0	1	6	13	32	45	185	28	11	4	8	7	15	4	0	10	29	12	12	21	38	15	6	17	35	47	66	54
471	0	1	0	1	0	0	1	6	18	22	40	238	33	14	7	15	4	19	18	10	15	30	15	12	20	35	15	5	20	35	45	82	66
472	0	1	0	1	0	0	1	6	21	34	55	185	30	8	4	12	5	17	11	2	14	27	14	12	23	36	16	4	14	34	46	66	57
475	0	1	1	0	0	0	1	6	26	32	58	287	36	0	5	13	6	19	3	4	15	14	4	12	36	46	2	0	20	48	50	29	66
501	0	1	0	1	0	0	1	2	20	28	48	196	31	3	3	7	3	10	9	8	10	23	10	12	28	40	15	7	8	35	44	66	40
502	0	1	0	1	0	0	1	2	22	38	60	255	16	3	2	8	4	12	6	7	11	27	16	14	23	34	24	20	14	26	45	96	51
503	0	1	0	1	0	0	1	2	25	28	53	252	27	7	7	10	5	15	8	3	12	26	7	14	24	43	10	5	15	40	46	58	56
504	0	1	0	1	0	1	0	2	19	28	47	257	43	2	0	7	5	12	4	2	7	8	1	17	42	49	0	0	13	50	50	11	49
505	0	1	0	1	0	0	1	2	23	32	55	238	25	2	5	12	6	18	3	4	14	21	8	15	29	42	13	1	19	37	50	52	66
506	0	1	0	1	0	0	1	2	18	28	46	318	43	12	14	9	7	16	7	3	11	15	6	12	35	44	5	5	16	45	47	48	55
507	0	1	0	1	0	1	0	2	19	22	41	297	38	6	1	7	3	10	5	5	10	16	2	13	34	48	10	1	15	40	49	35	48
508	0	1	0	1	1	0	0	2	26	36	62	240	34	1	3	7	5	12	2	0	9	11	9	16	39	41	6	1	15	44	50	30	52
509	0	1	0	1	0	1	0	2	24	24	48	195	34	3	13	9	9	17	6	0	17	23	9	14	27	41	8	2	19	42	49	55	67
510	0	1	0	1	0	1	0	2	33	30	63	371	29	2	3	10	5	15	5	2	14	17	8	15	33	42	15	3	20	36	48	48	64
511	0	1	0	1	0	1	0	2	20	20	40	301	42	3	1	7	6	13	3	1	9	6	4	12	44	46	2	2	10	48	50	16	44
512	0	1	0	1	0	1	0	2	14	20	34	230	36	9	5	8	5	13	9	1	10	22	16	16	28	34	17	4	16	33	47	65	55
513	0	1	0	1	0	1	0	2	23	32	55	275	31	6	1	8	5	13	3	4	10	16	8	13	34	42	5	4	15	45	50	38	51
514	0	1	0	1	0	0	1	2	19	32	51	298	41	2	0	6	4	10	1	1	7	12	4	14	38	16	1	1	10	49	49	19	41
515	0	1	0	1	0	1	0	2	26	34	60	250	37	4	4	12	5	17	4	0	14	12	3	14	38	47	4	2	19	46	49	25	64
516	1	0	0	1	0	1	0	2	35	36	71	238	38	7	34	9	9	18	7	9	14	14	9	15	36	41	9	6	18	41	49	81	65
517	0	1	0	1	0	1	0	2	33	48	81	195	31	7	2	7	4	11	9	1	10	15	3	12	35	47	11	2	15	39	50	34	48
518	0	1	0	1	0	0	1	2	25	32	57	287	40	6	4	9	7	16	6	1	10	9	2	11	41	38	4	1	14	46	50	21	51
519	0	1	1	0	0	0	1	2	18	34	52	257	35	4	12	6	9	15	16	1	13	11	4	11	39	46	4	9	14	46	47	41	53
520	0	1	0	1	0	0	1	2	15	26	41	250	33	6	6	11	4	15	12	16	11	14	7	12	36	43	10	9	11	40	41	62	49
551	0	1	0	1	0	1	0	6	41	36	77	309	36	1	0	7	3	10	7	1	10	21	5	7	29	45	7	3	12	43	48	37	39
552	0	1	1	0	0	0	1	6	23	42	65	298	42	4	1	6	4	10	7	0	10	7	3	11	43	47	1	1	8	49	49	13	39
553	0	1	1	0	0	1	0	6	11	20	31	194	46	5	0	6	6	12	1	0	9	11	4	15	39	46	4	1	13	46	50	30	49
554	0	1	0	1	0	0	1	6	21	26	47	262	44	5	2	9	5	14	7	0	13	8	3	10	42	47	2	1	13	48	50	16	50
555	0	1	0	1	0	0	1	6	17	24	41	185	19	2	4	9	7	16	1	2	17	20	9	11	30	41	10	5	21	40	47	50	63
556	0	1	0	1	0	1	0	6	22	26	48	250	29	4	2	13	4	17	6	6	14	28	13	12	22	37	13	8	16	37	47	70	59
557	0	1	1	0	0	1	0	6	12	24	36	185	41	6	2	8	9	17	6	0	11	16	8	10	34	42	5	0	16	45	50	31	54
558	0	1	0	1	0	0	1	6	22	32	54	257	36	10	2	6	6	12	11	0	10	15	9	13	35	41	3	1	15	47	49	20	50
559	0	1	0	1	0	0	1	6	26	12	38	407	23	9	18	7	6	13	8	5	11	39	12	7	11	38	20	7	13	30	48	101	44
560	0	1	0	1	0	1	0	6	37	34	71	309	37	12	18	7	7	14	7	0	11	17	5	12	33	45	4	3	15	46	48	47	52
561	0	1	0	1	0	1	0	6	39	44	83	318	42	14	3	5	5	10	5	1	8	8	1	11	42	49	0	0	12	50	50	13	41
562	0	1	1	0	0	0	1	6	18	34	52	275	40	8	4	6	5	11	7	1	10	17	3	12	33	47	3	1	16	47	49	29	49
563	0	1	1	0	0	0	1	6	31	38	69	327	41	9	1	6	4	10	10	0	11	11	3	10	39	47	3	0	14	47	50	18	45
564	0	1	0	1	0	0	1	6	31	26	57	226	23	12	3	9	5	14	6	22	13	33	12	9	17	38	21	4	16	29	49	95	52
565	0	1	0	1	0	1	0	6	28	30	58	309	37	2	5	12	6	18	6	5	14	18	7	13	32	43	9	3	20	41	49	47	65
566	0	1	0	1	0	1	0	6	28	34	62	396	38	4	3	6	5	11	13	1	12	16	5	16	34	45	5	5	15	45	48	35	54
567	0	1	1	0	0	0	1	6	28	24	52	298	31	18	6	6	7	13	8	1	11	18	5	11	32	45	8	2	13	42	50	40	48
568	0	1	1	0	0	0	1	6	22	36	58	338	33	7	1	7	5	12	5	0	11	14	1	11	36	49	6	1	15	44	49	23	49
569	0	1	1	0	0	0	1	6	20	36	56	359	37	10	2	6	5	11	5	1	10	15	2	11	35	48	2	0	14	48	50	22	46
571	0	1	1	0	0	0	1	6	23	36	59	338	38	8	1	7	11	18	5	0	13	10	3	13	40	47	5	1	20	45	49	20	64
601	0	1	1	0	0	1	0	3	29	38	67	262	33	11	9	8	7	15	1	0	11	26	21	12	24	29	9	6	12	41	46	71	50
602	0	1	1	0	0	1	0	3	48	54	102	195	35	17	7	11	7	18	8	1	15	11	8	13	39	42	4	7	20	46	48	38	66
603	0	1	1	0	0	1	0	3	28	40	68	185	24	8	5	11	6	17	4	1	13	35	9	15	15	41	14	4	19	37	46	68	64
604	0	1	1	0	0	0	1	3	25	36	61	250	25	16	4	8	8	16	7	0	10	28	12	12	22	38	22	7	20	28	45	73	58
605	1	0	0	1	0	1	0	3	26	30	56	262	31	12	16	10	5	15	4	7	13	30	22	9	20	29	16	19	18	35	42	110	54
606	1	0	0	1	0	1	0	3	20	28	48	446	37	12	23	8	5	13	12	1	12	30	17	5	20	33	11	5	19	39	50	87	49
607	0	1	1	0	0	1	0	3	23	36	59	226	39	8	1	10	3	13	6	0	13	20	11	12	30	39	3	2	20	47	48	37	59
608	0	1	1	0	0	0	1	3	5	24	29	226	28	14	4	9	3	12	1	3	11	24	10	12	24	40	6	3	18	44	48	52	53
609	0	1	1	0	0	1	0	3	14	34	48	250	30	17	2	10	8	19	19	2	16	14	5	17	36	45	3	3	20	47	47	29	71
610	0	1	1	0	0	1	0	3	25	20	45	275	37	2	2	9	2	11	5	20	12	12	3	13	38	47	12	3	13	38	49	52	49
611	1	0	1	0	0	0	1	3	45	56	101	238	36	7	1	8	5	13	9	0	10	16	4	17	34	46	2	2	17	48	48	25	57
612	0	1	1	0	0	1	0	3	12	28	40	318	30	9	8	7	5	12	7	0	9	21	12	13	29	38	10	7	11	40	46	58	45
613	0	1	1	0	0	0	1	3	31	50	81	407	42	6	2	7	5	12	7	2	9	10	3	15	40	47	2	2	11	48	50	21	47
614	0	1	0	1	0	1	0	3	12	32	44	216	37	10	4	7	6	13	4	0	10	9	4	12	42	46	7	1	15	43	50	25	50
615	0	1	1	0	0	0	1	3	24	34	58	226	36	9	9	7	6	13	10	4	12	17	9	12	33	41	4	3	16	46	48	46	53
616	0	1	1	0	0	0	1	3	25	36	61	287	37	11	4	9	6	15	6	4	12	12	12	13	34	38	7	2	14	43	49	41	54

TABLE 40--Continued

Personal Data										Scores on IBM Cards																				
703	0	1	0	1	0	0	1	1	25	26	51	150	30	14	6	12	9	21	9	4	20	21	11	14	29	39	9	11	20	41	45	62	75
705	0	1	1	0	0	0	1	1	30	38	68	298	43	8	0	7	4	11	13	0	13	6	2	17	44	48	1	0	15	49	50	9	56
706	0	1	0	1	0	0	1	1	13	32	45	195	34	7	2	7	3	10	7	3	10	18	15	16	32	35	9	1	12	41	49	48	48
707	0	1	0	1	0	0	1	1	18	28	46	185	23	5	2	10	6	16	12	5	15	28	14	14	22	36	17	9	17	33	42	75	62
708	0	1	1	0	0	0	1	1	25	24	49	226	36	17	7	7	9	16	10	5	14	9	5	14	41	45	4	3	15	46	47	33	59
709	0	1	1	0	0	0	1	1	18	34	52	250	36	3	5	6	5	11	10	6	16	12	8	19	38	42	5	5	16	45	46	41	62
710	0	1	0	1	0	0	1	1	36	48	84	480	31	2	3	11	3	14	7	5	14	22	15	14	28	35	10	8	15	40	43	63	57
714	0	1	0	1	0	0	1	1	21	24	45	238	32	12	20	9	8	17	9	9	16	16	8	15	34	42	5	4	17	45	47	62	65
717	0	1	0	1	0	0	1	1	24	46	70	226	39	6	1	7	5	12	7	3	10	8	3	17	42	47	4	5	16	46	45	24	55
718	0	1	1	0	0	0	1	1	28	26	54	287	38	8	0	8	4	12	9	1	12	21	3	15	29	47	8	1	16	42	50	34	55
719	0	1	1	0	0	0	1	1	37	42	79	216	42	3	1	8	4	12	5	2	13	7	2	16	43	48	2	0	15	48	50	14	56
720	0	1	1	0	0	1	0	1	26	26	52	480	40	14	2	8	9	17	7	5	11	8	3	16	42	47	5	1	13	45	49	24	57
722	0	1	1	0	0	0	1	1	28	30	58	185	37	15	1	8	12	20	8	0	13	13	3	18	37	47	8	2	14	42	49	27	65
725	0	1	0	1	0	0	1	1	23	32	55	216	41	8	0	7	5	12	1	1	10	10	4	15	40	46	1	1	15	49	50	17	52
726	0	1	0	1	0	0	1	1	32	44	76	250	37	11	1	7	6	13	17	2	10	9	4	19	41	46	3	3	15	47	50	22	57
727	0	1	1	0	0	0	1	1	48	40	88	250	41	9	3	7	4	11	8	0	14	7	1	17	43	49	1	0	15	49	50	12	57
754	0	1	0	1	0	0	1	6	39	54	93	338	45	15	0	8	9	17	1	0	11	5	1	14	45	49	1	1	16	49	49	8	58
755	0	1	0	1	0	0	1	6	34	28	62	275	42	3	0	11	5	16	4	1	11	2	4	14	49	46	1	0	18	49	50	8	59
756	0	1	0	1	0	0	1	6	54	54	108	349	38	10	1	6	4	10	11	1	10	5	5	14	45	45	4	1	11	46	49	17	45
757	0	1	0	1	0	0	1	6	24	48	72	262	31	14	3	8	5	13	8	6	9	15	6	11	35	44	15	10	18	35	47	55	51
758	0	1	0	1	0	1	0	6	32	62	94	480	45	10	5	8	5	13	10	1	12	11	9	11	39	41	1	1	16	49	49	28	52
759	0	1	0	1	0	0	1	6	21	32	53	185	29	27	5	8	7	15	11	1	17	15	2	15	35	48	10	1	21	40	49	34	68
760	0	1	0	1	0	0	1	6	48	40	88	250	36	22	1	11	14	25	19	1	19	21	13	10	29	37	10	3	18	40	49	49	72
761	0	1	0	1	0	0	1	6	34	24	58	349	43	2	1	9	6	15	8	0	12	3	2	19	47	48	0	0	17	50	50	6	63
762	0	1	0	1	0	0	1	6	33	34	67	309	39	3	1	6	5	11	7	0	8	10	1	17	40	49	3	0	15	47	50	15	51
763	0	1	0	1	0	0	1	6	17	24	41	417	32	2	2	9	5	14	0	12	9	20	8	18	30	42	5	4	9	45	46	51	50
764	0	1	0	1	0	1	0	6	18	58	76	275	32	1	2	9	5	14	5	5	10	12	4	17	38	46	9	3	12	41	48	35	53
771	0	1	0	1	0	0	1	6	15	30	45	298	32	6	11	9	4	13	11	2	12	23	15	12	27	35	9	7	16	41	44	67	53
802	1	0	0	1	1	0	0	3	13	26	39	177	22	10	17	11	2	13	4	2	11	27	20	20	24	30	32	11	15	19	43	109	59
805	0	1	0	1	0	0	1	3	15	26	41	238	30	4	0	7	2	9	4	5	8	26	12	20	24	38	15	6	12	36	46	64	49
806	0	1	0	1	0	0	1	3	13	30	43	207	36	6	9	9	2	11	9	1	10	15	11	20	35	39	7	4	13	43	48	47	54
807	0	1	0	1	0	0	1	3	20	28	48	207	16	8	1	8	4	12	2	1	9	16	4	19	35	47	18	11	15	32	46	51	55
810	0	1	0	1	0	0	1	3	21	38	59	163	39	2	1	8	2	10	6	1	10	6	1	18	44	49	6	4	15	44	49	19	53
811	0	1	0	1	0	0	1	3	25	24	49	195	37	4	1	8	2	10	0	1	10	9	9	20	41	41	6	2	15	44	49	28	55
814	0	1	0	1	0	0	1	3	12	32	44	150	36	6	2	8	2	10	2	22	10	16	10	19	34	40	24	19	10	26	40	93	49
821	0	1	0	1	0	0	1	3	26	36	62	207	41	5	0	8	2	10	4	0	7	9	7	20	41	43	7	9	10	43	46	32	47
824	0	1	0	1	0	0	1	3	26	22	48	150	31	2	1	10	2	12	6	0	12	16	11	20	34	39	16	8	17	34	44	52	61
854	0	1	1	0	0	0	1	2	30	38	68	250	33	5	1	10	4	14	7	1	12	32	11	17	18	39	12	5	15	38	45	62	58
858	0	1	1	0	0	0	1	2	24	40	64	250	37	3	3	10	3	13	7	1	13	11	9	20	39	41	2	0	11	48	50	26	57
859	0	1	1	0	0	0	1	2	29	36	65	262	41	2	0	9	3	12	6	1	8	4	2	17	46	48	3	0	15	47	50	10	52
860	0	1	1	0	0	0	1	2	33	52	84	262	42	5	0	8	2	10	3	0	8	12	4	15	38	47	5	3	14	46	47	24	47
862	0	1	1	0	0	0	1	2	24	36	60	216	36	13	2	10	3	13	3	0	12	16	6	15	34	44	7	4	15	43	47	35	55
863	0	1	1	0	1	0	0	2	23	28	51	195	30	7	0	9	5	14	3	0	12	16	10	19	35	40	7	2	18	43	48	35	63
865	0	1	1	0	0	0	1	2	28	48	76	261	43	2	2	10	4	14	1	1	12	8	3	20	42	47	1	1	15	49	49	16	61
867	0	1	1	0	0	1	0	2	16	26	42	147	26	2	1	9	4	13	1	2	13	30	10	18	20	40	19	7	16	31	44	69	60
868	0	1	1	0	0	0	1	2	34	40	74	161	34	8	3	9	3	12	2	3	12	14	3	17	36	47	10	6	15	40	50	39	56
869	0	1	1	0	0	0	1	2	20	36	56	201	34	5	0	8	5	13	6	0	8	14	3	16	37	48	3	4	16	47	46	24	53
870	0	1	1	0	0	0	1	2	16	40	56	250	24	4	4	10	4	14	4	1	13	23	12	19	27	38	18	4	20	32	46	62	66
871	0	1	1	0	0	0	1	2	31	52	83	195	35	9	0	14	5	19	10	0	10	14	4	20	36	46	2	2	13	48	50	22	62
872	0	1	1	0	0	0	1	2	24	24	48	238	35	12	6	13	6	19	3	0	10	23	12	15	27	38	19	6	15	31	45	66	59
901	0	1	1	0	0	0	1	5	20	34	54	359	31	3	0	8	7	15	3	18	11	19	8	15	31	42	7	5	15	43	45	57	56
902	0	1	1	0	0	0	1	5	27	30	57	327	43	7	0	9	7	16	7	5	15	6	1	20	44	49	2	1	15	48	49	15	66
903	0	1	1	0	1	0	0	5	15	20	35	262	27	4	15	10	7	17	3	13	15	35	22	15	15	28	28	7	19	22	43	120	66
904	1	0	0	1	1	0	0	5	14	34	48	287	26	5	6	8	8	16	4	8	12	38	18	14	12	32	30	13	18	20	37	113	60
905	1	0	0	1	1	0	0	5	19	32	51	298	32	8	5	7	9	16	8	1	17	13	6	15	37	44	16	21	19	34	39	62	67
907	0	1	1	0	1	0	0	5	18	18	36	287	39	13	2	11	11	22	6	7	17	24	4	18	26	46	10	1	20	40	49	48	77
908	1	0	0	1	1	0	0	5	16	32	48	349	26	5	1	10	6	16	3	1	12	26	16	17	26	34	13	2	18	37	50	59	63
909	1	0	0	1	1	0	0	5	19	30	49	550	19	12	19	17	7	24	5	9	17	45	27	15	5	23	14	18	18	36	39	132	74
910	0	1	1	0	1	0	0	5	13	18	31	174	16	5	2	8	9	17	6	1	13	35	23	15	15	27	31	15	14	20	37	107	59
911	1	0	0	1	1	0	0	5	17	28	45	426	30	6	26	10	3	13	0	2	9	28	20	19	22	30	18	6	14	32	44	100	55
912	0	1	1	0	0	1	0	5	15	32	47	318	28	1	2	8	4	12	3	0	12	16	8	17	34	42	13	0	19	37	50	39	60
913	1	0	0	1	0	0	1	5	39	32	71	591	33	8	16	13	2	15	3	16	10	27	12	14	23	38	13	18	14	37	41	102	53
914	0	1	1	0	1	0	0	5	22	28	50	298	37	1	1	8	3	11	2	1	12	22	10	15	28	40	6	1	18	44	49	41	56
915	0	1	1	0	0	1	0	5	24	36	60	349	34	9	9	7	7	14	3	3	11	16	5	14	34	45	7	3	16	43	48	43	55
916	0	1	1	0	1	0	0	5	22	30	52	338	37	1	0	9	3	12	3	0	10	18	3	20	32	47	4	2	19	46	48	27	61

TABLE 41

DESCRIPTION OF SCORES SHOWN IN TABLE 40

Variable Number	Description
1	Number of School
2	Number of Student
3	Sex, Male=1, Female=0
4	Sex, Male=0, Female=1
5	Shorthand=1, Non-Shorthand=0
6	Shorthand=0, Non-Shorthand=1
7	One-room elementary school=1, Otherwise=0
8	Township elementary school=1, Otherwise=0
9	Town or city elementary school=1, Otherwise=0
10	Time of day tests administered, 1=1st hour 2=2nd hour
11	Reading Vocabulary Score
12	Reading Comprehension Score
13	Combined Score of Vocabulary and Comprehension
14	Reading Speed
15	Spelling Score
16	Errors found in Proofreading Test 1
17	Errors missed in Proofreading Test 1
18	Typing Time for Proofreading Test 1
19	Proofreading Time for Proofreading Test 1
20	Total Time for Proofreading Test 1
21	Errors found in Proofreading Test 2
22	Errors missed in Proofreading Test 2

TABLE 41--Continued

Variable Number	Description
23	Total Time for Proofreading Test 2
24	Spelling Errors missed in Proofreading Test 3
25	Typing Errors missed in Proofreading Test 3
26	Total Time for Proofreading Test 3
27	Spelling Errors found in Proofreading Test 3
28	Typing Errors found in Proofreading Test 3
29	Spelling Errors missed in Proofreading Test 4
30	Typing Errors missed in Proofreading Test 4
31	Total Time for Proofreading Test 4
32	Spelling Errors found in Proofreading Test 4
33	Typing Errors found in Proofreading Test 4
34	Total Proofreading Score (Variables 17, 22, 24, 25, 29, and 30 added)
35	Total Proofreading Time (Variables 20, 23, 26, and 31 added)

APPENDIX H

TABLE 42

DESCRIPTION OF DATA USED IN CORRELATION MATRIX
THAT IS SHOWN IN TABLE 39

Variable Number	Column Numbers	Description
1	1	Number of School
2	2-3	Number of Student
36	5	Time of day tests administered
37	7-8	Total Errors missed in Proofreading Test 1
38	9-10	Additions Errors in Proofreading Test 1
39	11-12	Transpositions in Proofreading Test 1
40	13-14	Wrong Word Errors in Proofreading Test 1
41	15-16	Omissions Errors in Proofreading Test 1
42	17-18	Capitalization Errors in Proofreading Test 1
43	19-20	Total Errors missed in Proofreading Test 2
44	21-22	Additions Errors in Proofreading Test 2
45	23-24	Transpositions in Proofreading Test 2
46	25-26	Wrong Word Errors in Proofreading Test 2
47	27-28	Omissions Errors in Proofreading Test 2
48	29-30	Total Spelling Errors in Proofreading Test 3
49	31-32	Homonyms in Proofreading Test 3
50	33-34	Other Spelling Errors in Proofreading Test 3
51	35-36	Total Typing Errors in Proofreading Test 3
52	37-38	Additions Errors in Proofreading Test 3
53	39-40	Transpositions in Proofreading Test 3
54	41-42	Wrong Word Errors in Proofreading Test 3

TABLE 42--Continued

Variable Number	Column Numbers	Description of Data
55	43-44	Omissions Errors in Proofreading Test 3
56	45-46	Total Spelling Errors in Proofreading Test 4
57	47-48	Homonyms in Proofreading Test 4
58	49-50	Possessives in Proofreading Test 4
59	51-52	Other Spelling Errors in Proofreading Test 4
60	53-54	Total Typing Errors in Proofreading Test 4
61	55-56	Additions Errors in Proofreading Test 4
62	57-58	Transpositions in Proofreading Test 4
63	59-60	Wrong Word Errors in Proofreading Test 4
64	61-62	Omissions Errors in Proofreading Test 4
65	64-65	Total Errors added by Students in Test 4
66	66-67	Additions Errors added by Students in Test 4
67	68-69	Transpositions added by Students in Test 4
68	70-71	Wrong Words added by Students in Test 4
69	72-73	Omissions Errors added by Students in Test 4
70	74-75	Spelling Errors added by Students in Test 4

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